GPS AutoSteer System
Installation Manual

Supported Vehicles

Case IH Vehicles

Case 2577 Combines
Case 2588 Combines

Accuguide Ready

PN: 602-0233-01-A

LEGAL DISCLAIMER

Note: Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

Note: Take careful note of the safety information in the Safety Information section and throughout this manual.

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

Please take special note of the following warnings:

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle AutoSteer system turns the wheel automatically and the vehicle wheels move. Be sure that all people and obstacles are clear of the vehicle before engine startup, calibration, tuning or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

Special Requirements

Tools

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

13mm wrench	3/8" open wrench	#1 Phillips screwdriver
13mm socket and ratchet	1/2" open wrench	#2 Phillips screwdriver
15/16 open wrench	9/16" open wrench	Wire cutter small
15/16 socket and ratchet	9/16" socket and ratchet	Cleaning brush
1 1/8 " wrench	Breaker bar	Ten foot (3 meter) ladder
1 1/8 socket and ratchet	1 1/2" hole saw (if required)	
1/8 Allen Wrench	Tape measure (12ft minimum)	
5/32 Allen wrench	Portable drill	
Hacksaw	5/16 " drill bit	

Safety Information

Warning Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:

- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.

Note: Verify all screws, bolts, nuts and cable connections are tight after the final installation of the AutoSteer system.

⚠ WARNING

To avoid electrical shock hazards, remove the Roof Module from the vehicle before driving under low structures or low electrical power lines.

⚠ WARNING

To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

⚠ WARNING

To prevent accidental death or injury from being run over by the vehicle, never leave the vehicle's operator chair with the GPS system engaged.

⚠ WARNING

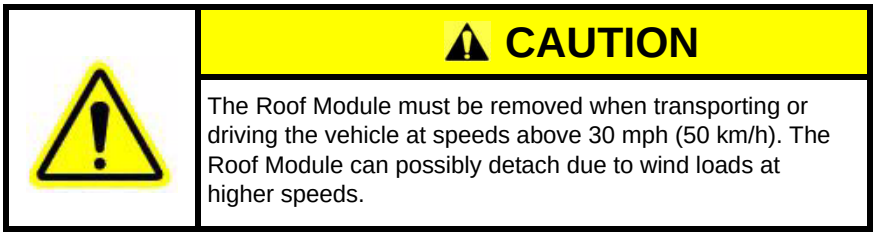
To understand the potential hazards associated with the operation of AutoSteer equipment read the provided documentation before installing the AutoSteer system on a vehicle.

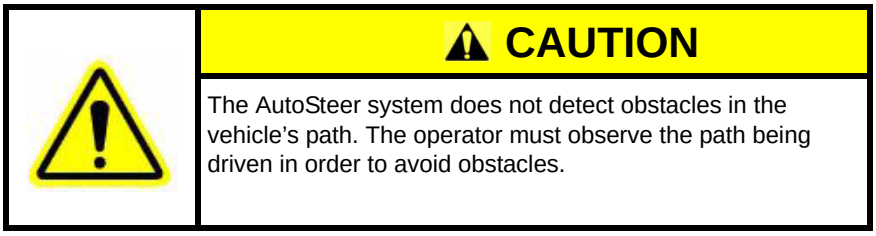
⚠ WARNING

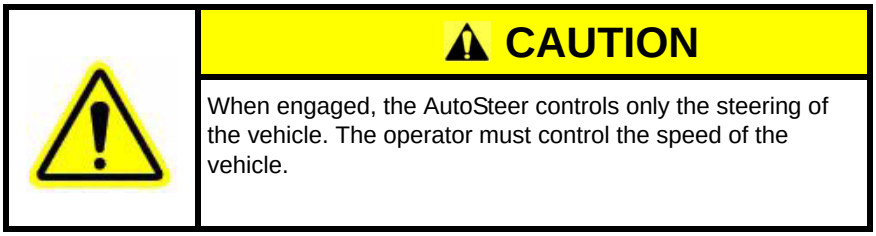
To prevent the accidental engagement of AutoSteer system and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.

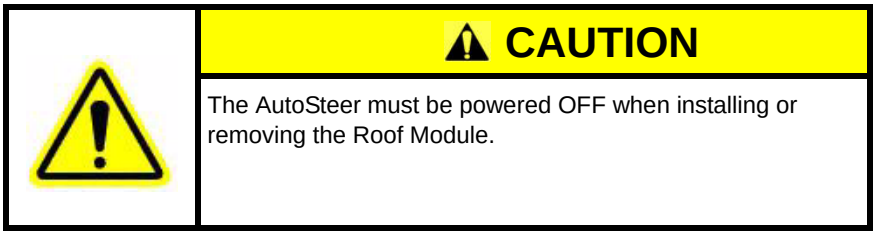
Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:


CAUTION
The Roof Module must be removed when transporting or driving the vehicle at speeds above 30 mph (50 km/h). The Roof Module can possibly detach due to wind loads at higher speeds.


CAUTION
The AutoSteer system does not detect obstacles in the vehicle's path. The operator must observe the path being driven in order to avoid obstacles.


CAUTION
When engaged, the AutoSteer controls only the steering of the vehicle. The operator must control the speed of the vehicle.



CAUTION

The Roof Module must always be firmly secured to the Roof Rail using the provided hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.

Vehicle Requirements

The vehicle steering and hydraulic systems must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.

The vehicle electrical system and battery must be in good working order.

The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle improves overall installation and cable routing.

The vehicle must be Accuguide Ready from the factory with an Electro hydraulic valve for autosteer and a flow switch for manual override.

Important Information

Note: Verify that all screws, bolts, nuts and cables are tight after the AutoSteer system installation.

Technical Support

Refer to your owner's manual for technical support information.

Contact Information

Refer to your owner's manual for contact information.

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Installation Overview

This **Installation Overview** chapter contains part numbers, kit overview diagram, cabling diagram and the installation procedure for the Case Combine AutoSteer Kit.

- *Vehicle Inspection*
- *Installation Procedure Outline*
- *Kit Overview*
  - *Assemblies*
    - *Bracket Kit Components*
    - *AutoSteer Common Kit Components*
- *Cable Diagram*

This installation guide describes the AutoSteer system installation on several models as shown on the front cover of this manual. The AutoSteer installation kit PN: 188-0038-01 is used on these vehicle series.

Note: If you are installing an electric steering wheel actuator such as OnTrac II, skip the SA Module, AutoSteer Valve connection and System Cable connection installation procedures provided in this manual. Refer to your electric steering product manual for additional instructions.

Vehicle Inspection

Before beginning the AutoSteer system installation confirm the vehicle steering system is in good working order. Drive the vehicle and verify the vehicle is in correct working order. Also, ensure the following system operations and components:

- Verify you can turn the vehicle.
- Ensure the vehicle steers straight.
- Check for loose or worn steering components.
- Check for hydraulic fluid leaks throughout the system.
- Ensure the hydraulic fluid level is correct.
- Service the vehicle if the steering is not in good working order.

Installation Procedure Outline

1. Verify shipped components.
2. Install the Wheel Angle Sensor.
3. Install the SA Module.
4. Install the Roof module.
5. Install the User Terminal.
6. Install the Main Cable Harness and SA Module Harness.
7. Ensure all connectors are properly coupled.
8. Power ON the system.
9. Calibrate the tractor.
10. Tune the tractor.
11. Verify installation and system operation.

Kit Overview

Figure 1-1 Installation Kit Components (PN: 188-0038-01

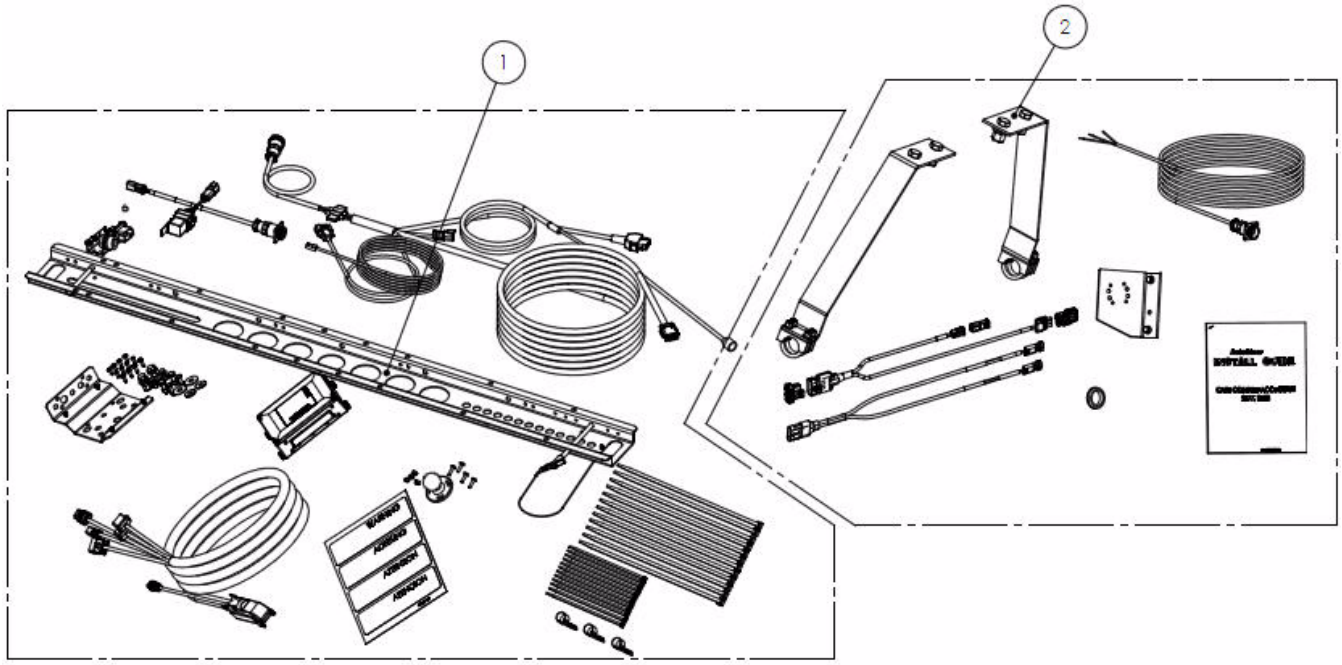


Table 1-1 Installation Kit Components (PN: 188-0038-01)

Item	Component	Part Number
1.	Common Kit	153-0009-01
2.	Bracket Kit	152-0031-01

Assemblies

- *AutoSteer Common Kit Components*
- *Bracket Kit Components*

AutoSteer Common Kit Components

Figure 1-2 Common Kit Components (PN: 153-0009-01)

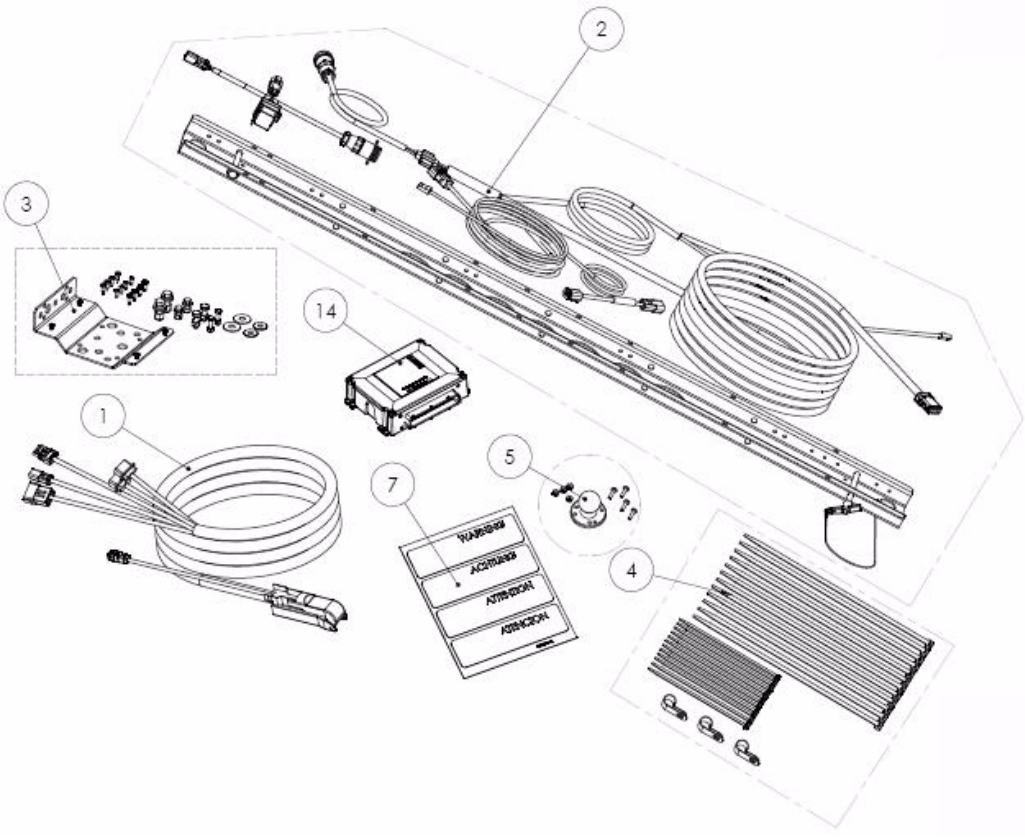


Table 1-2 Common Kit Components (PN: 153-0009-01)

Item	Component	Part Number
1.	SA Module Harness	201-0371-02
2.	Common Assembly Kit	200-0497-02
3.	SA Module Bracket	200-0190-01
4.	Mounting Hardware	200-0076-01
5.	Display RAM Mount	200-0508-01
7.	Warning Labels	603-0074-01
14.	SA Module Assembly	200-0206-01

Bracket Kit Components

Figure 1-3 Bracket Kit Components (PN: 152-0031-01)

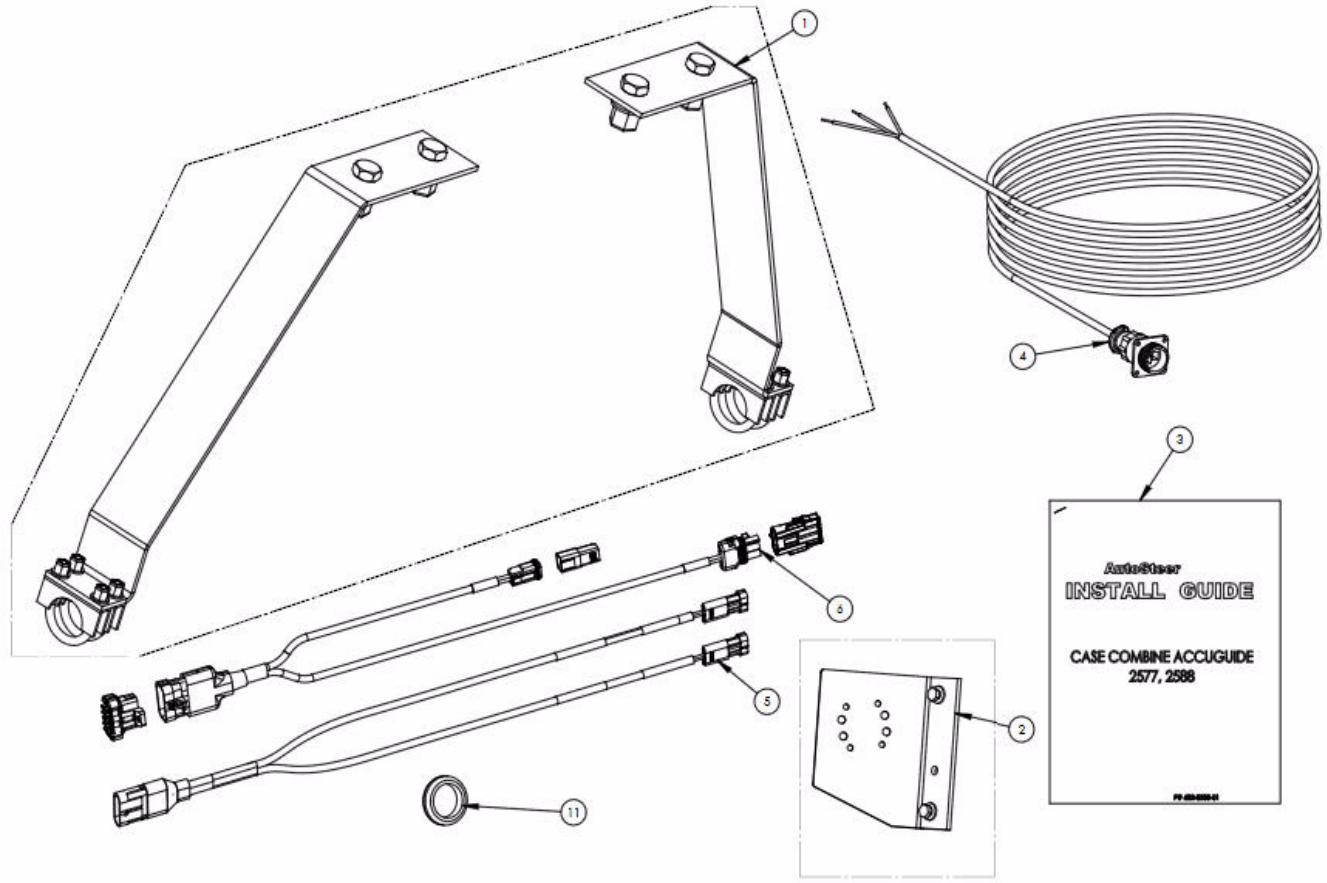
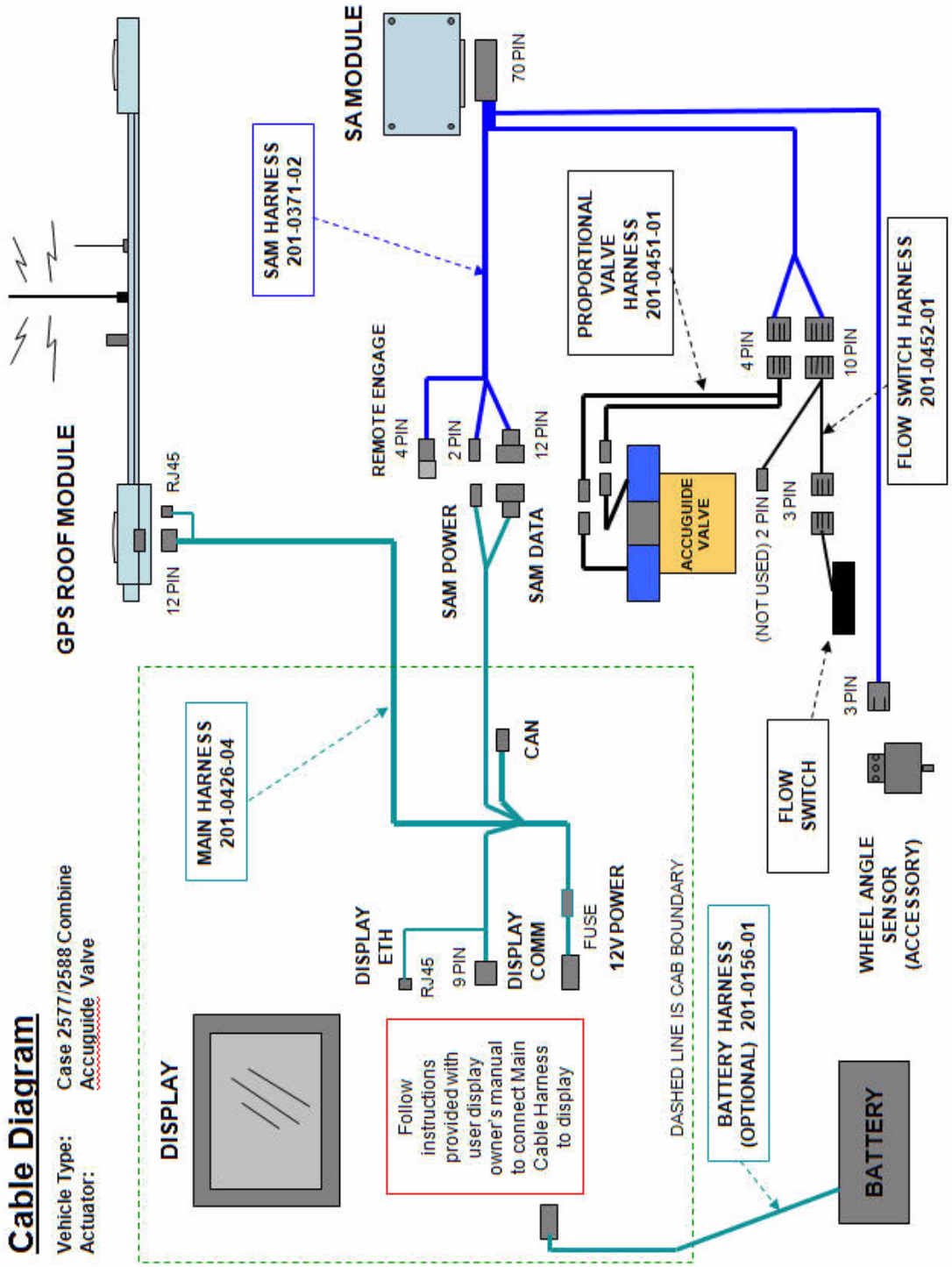


Table 1-3 Bracket Kit Components (PN: 152-0031-01)

Item	Component	Part Number
1.	Roof Module Bracket	200-0127-01
2.	Display Bracket	200-0126-02
3.	Installation Guide	602-0233-01
4.	Battery Power Adapter Cable	201-0156-01
5.	Proportional Valve Harness	201-0451-01
6.	Flow Switch Harness	500-0452-01
11.	Grommet	508-0014-01

Cable Diagram



Wheel Angle Sensor (WAS) Installation

This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

- *Two Wheel Drive Installation*
  - *Mounting Wheel Angle Sensor Hardware*
  - *Cutting Linkage Rods to Length*
  - *Assembling Linkage Rod Hardware*
  - *Attaching and Adjusting Wheel Angle Sensor Linkage Rods*
- *Four Wheel Drive Installation*
  - *Mounting Wheel Angle Sensor Hardware*
  - *Cutting Linkage Rods to Length*
  - *Assembling Linkage Rod Hardware*
  - *Attaching and Adjusting Wheel Angle Sensor Linkage Rods*

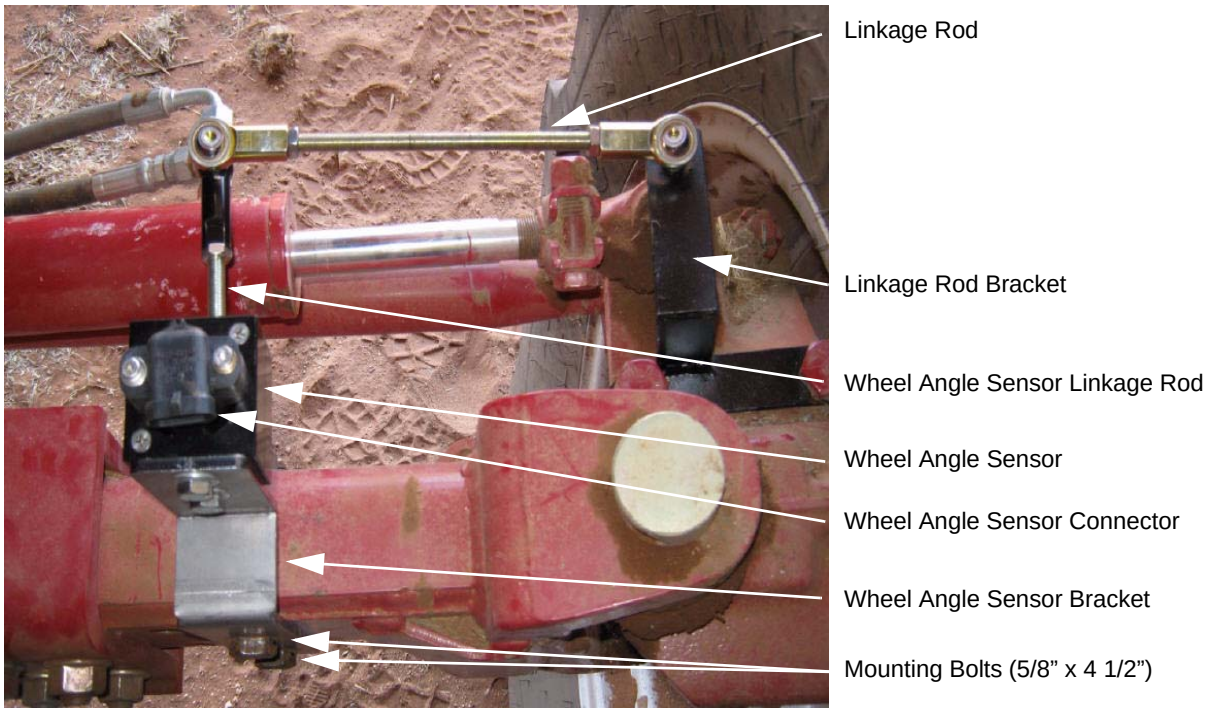
Note: The Wheel Angle Sensor is optional equipment and is not provided with the installation kit. The Wheel Angle Sensor installation instructions are provided for special installations, when required. If additional line acquisition performance is required, an AutoSteer Wheel Angle Sensor kit is available.

Two Wheel Drive Installation

Mounting Wheel Angle Sensor Hardware

1. The Wheel Angle Sensor components are shown in *Figure 2-1*.

Figure 2-1 Wheel Angle Sensor Components



2. Identify the Wheel Angle Sensor mounting location.

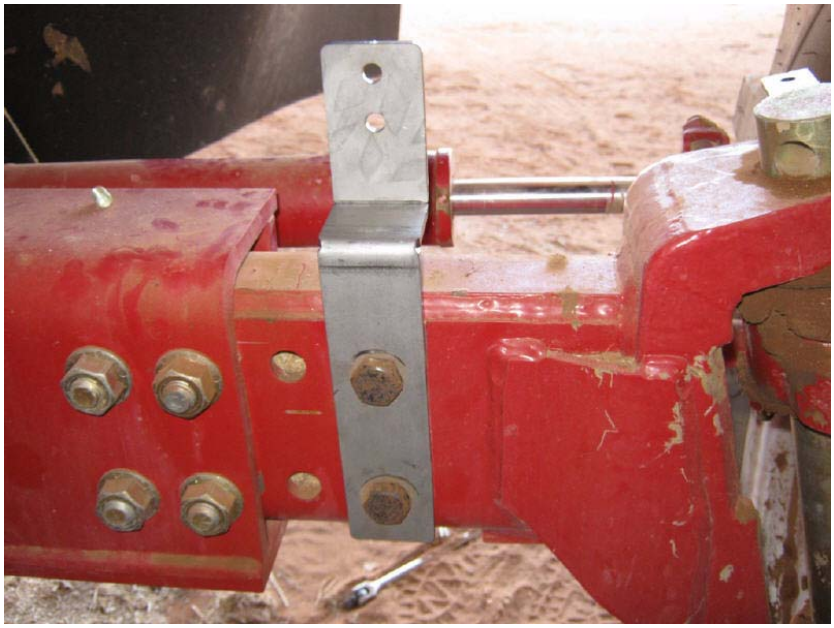
Note: The Wheel Angle Sensor is located on the rear steer axle left hand side. The Wheel Angle Sensor is bolted to the outer axle extension mounting holes. See *Figure 2-2*.

---

3. Remove the two vehicle 5/8" x 4 1/2" UNC bolts if they are present, otherwise use the Wheel Angle Sensor kit bolts. See *Figure 2-2*.
4. Attach the Wheel Angle Sensor bracket using the vehicle 5/8" x 4 1/2" UNC bolts. See *Figure 2-2*.
5. Retighten the bolt using a 15/16 socket, ratchet and wrench.

Note: Ensure the Wheel Angle Sensor bracket axle mounting is perpendicular to the ground.

Figure 2-2 Wheel Angle Sensor Bracket Mounted



6. Attach Wheel Angle Sensor to the Wheel Angle Sensor bracket. See *Figure 2-3*.
7. Tighten the bolts with a 9/16" socket and ratchet.

Figure 2-3 Attaching the Sensor to the Bracket

8. Remove the inner drag link bolt holding the drag link assembly to the axle using a 15/16” socket, ratchet and a 15/16” wrench.

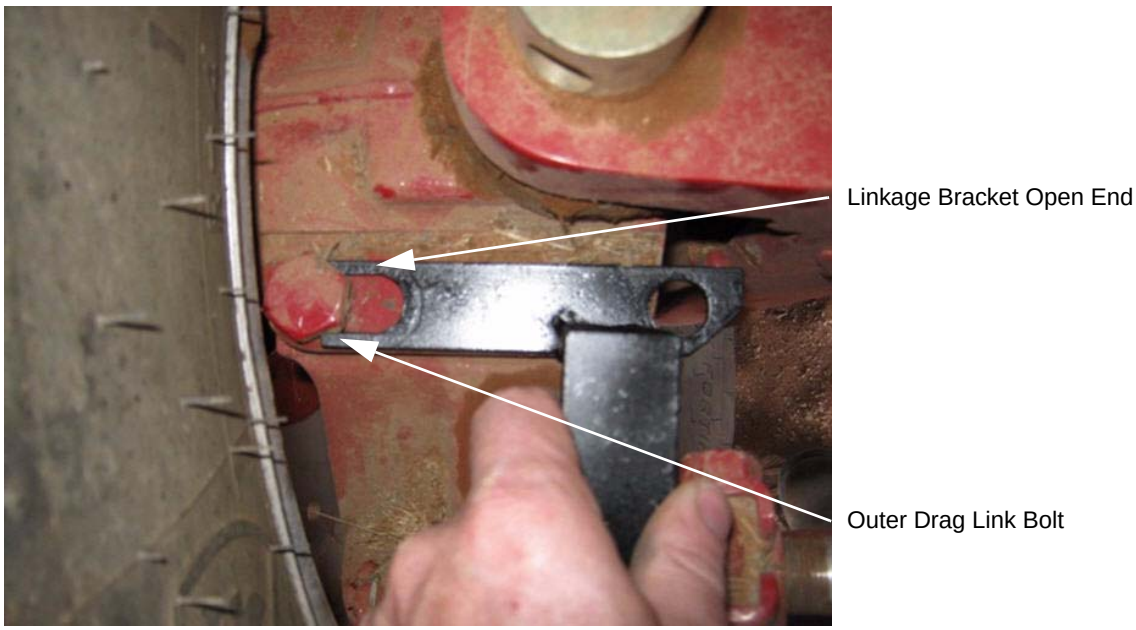
Note: A breaker bar may be necessary to loosen the bolts.

9. Loosen the outer drag link bolt holding the drag link assembly to the axle using a 15/16” socket, ratchet and a 15/16” wrench.

Note: Do not remove the outer bolt. Just loosen the outer bolt to ensure the drag link assembly does not fall off.

10. Slide the open slotted end of the linkage bracket under the outer drag link bolt. See *Figure 2-4*.
11. Replace the inner drag link bolt through the linkage bracket.
12. Tighten the inner and outer drag link bolts.

Figure 2-4 Wheel Angle Sensor Axle Bracket Mounted



Cutting Linkage Rods to Length

Note: Before cutting the linkage rods, verify the Wheel Angle Sensor brackets will attach to the vehicle as shown in this manual and they are attached the correct distance from any reference points shown. If this is not possible, do not cut the rods until it is determined if these lengths will work for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for ensuring the rods are cut to the proper length.

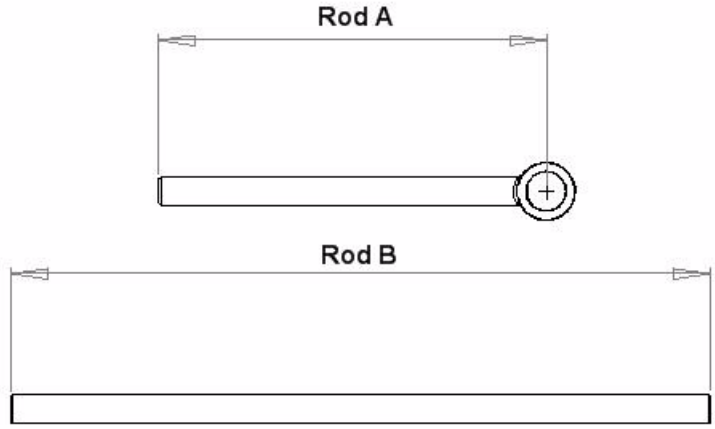
1. Measure and mark the two linkage rods for cutting, according to the length shown in *Table 2-1*.

Note: *Figure 2-5* shows the measurement points used to properly cut the linkage rods.

Table 2-1 Linkage Rod Cut Lengths

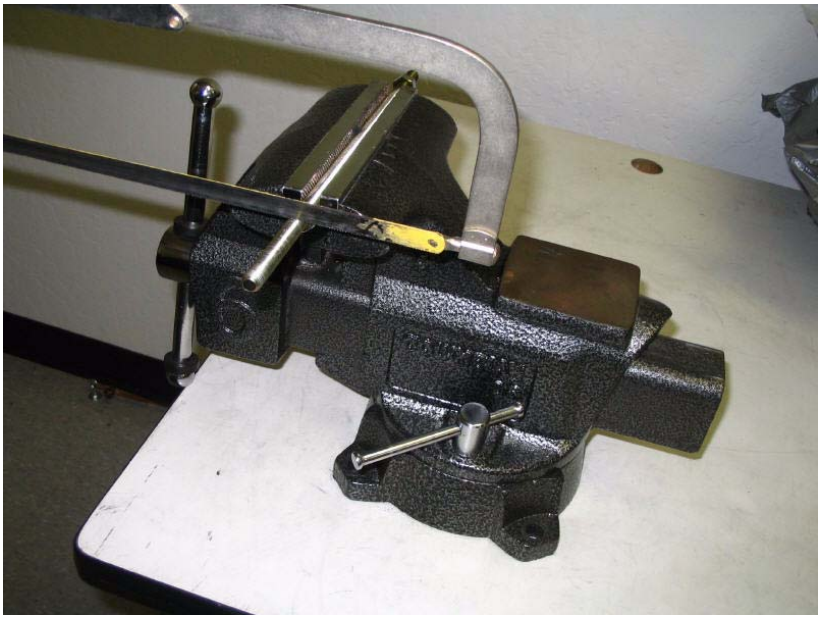
Item	Length
Rod A	4.5 inches (114 mm)
Rod B	7.9 inches (201 mm)

Figure 2-5 Linkage Rod Cut Length Measurement Points



2. Use a hack saw to cut the linkage rod to length while it is held in a bench vise. See *Figure 2-6*.

Figure 2-6 Linkage Rod Cutting

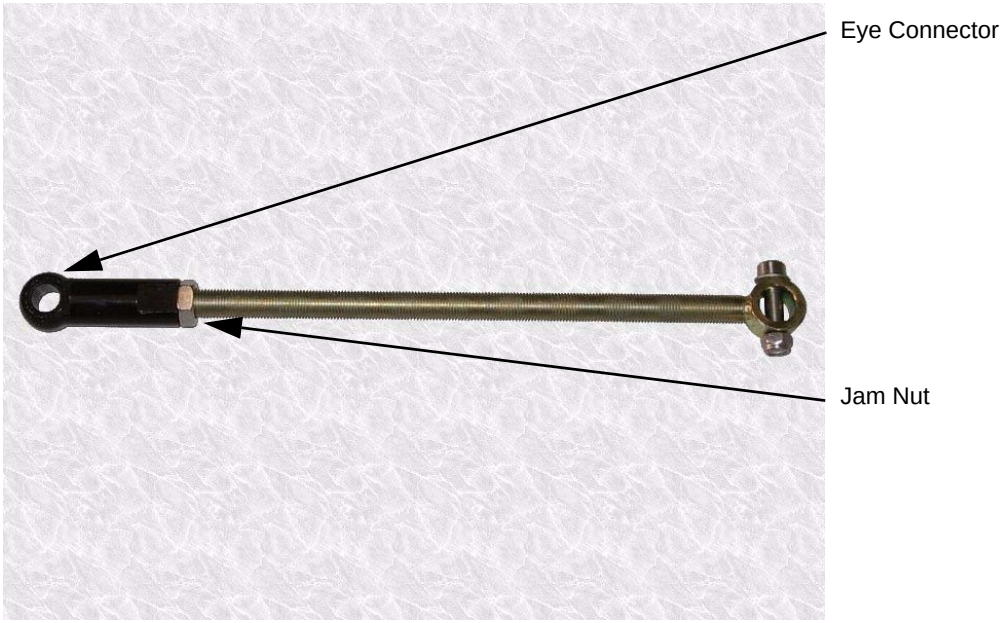


Assembling Linkage Rod Hardware

1. Attach a jam nut to the end of Rod A. See *Figure 2-7*.
2. Connect the eye connector to the Wheel Angle Sensor rod end, as shown in *Figure 2-7*.

Note: The threaded rods must be cut to the correct lengths before final assembly.

Figure 2-7 Rod A Assembled



3. Attach the jam nuts to each end of linkage Rod B
4. Attach the ball joints to both ends of the linkage arm as shown in *Figure 2-8*.

Note: The bolts for the ball joints should be facing the same direction as shown in *Figure 2-8*.

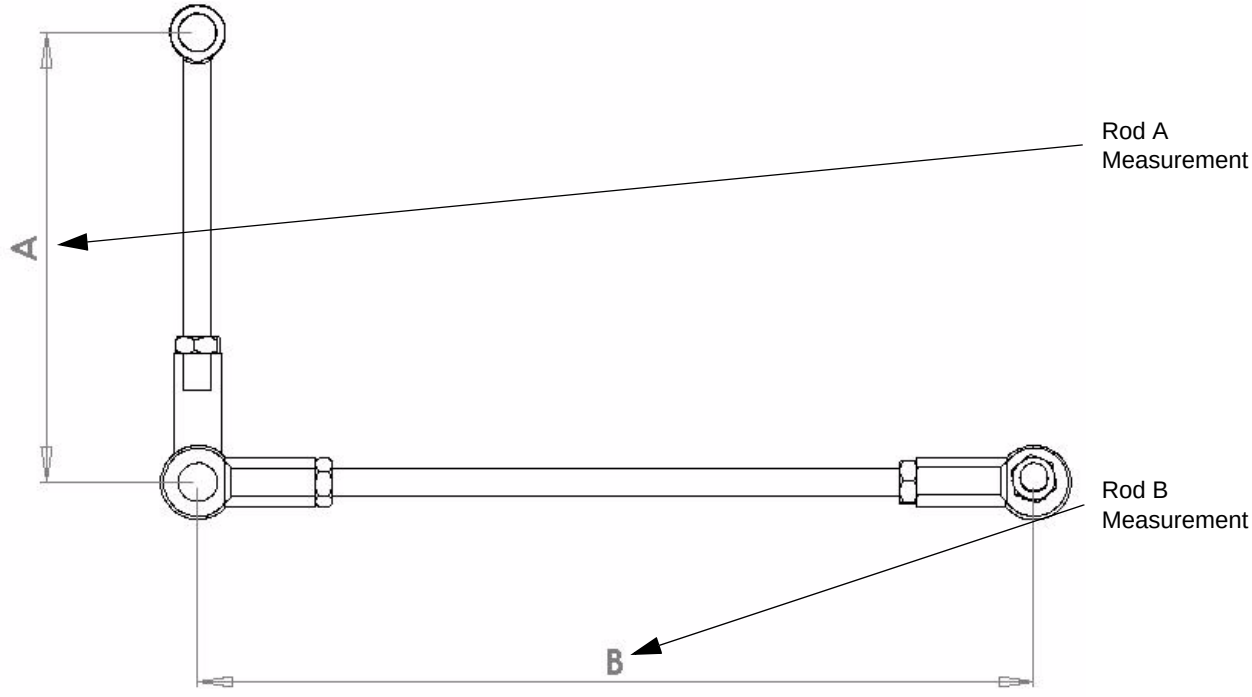
Figure 2-8 Linkage Rod Assembled

Note: The linkage rod after-assembly center-to-center lengths are shown in *Table 2-2*. *Figure 2-9* shows the measurement points for the assembled linkage rods.

Table 2-2 Assembled Linkage Rod Length

Item	Length
Rod A	5.5" (140 mm)
Rod B	9.8" (249 mm)

Figure 2-9 Linkage Rod Measurement Points (Assembled)

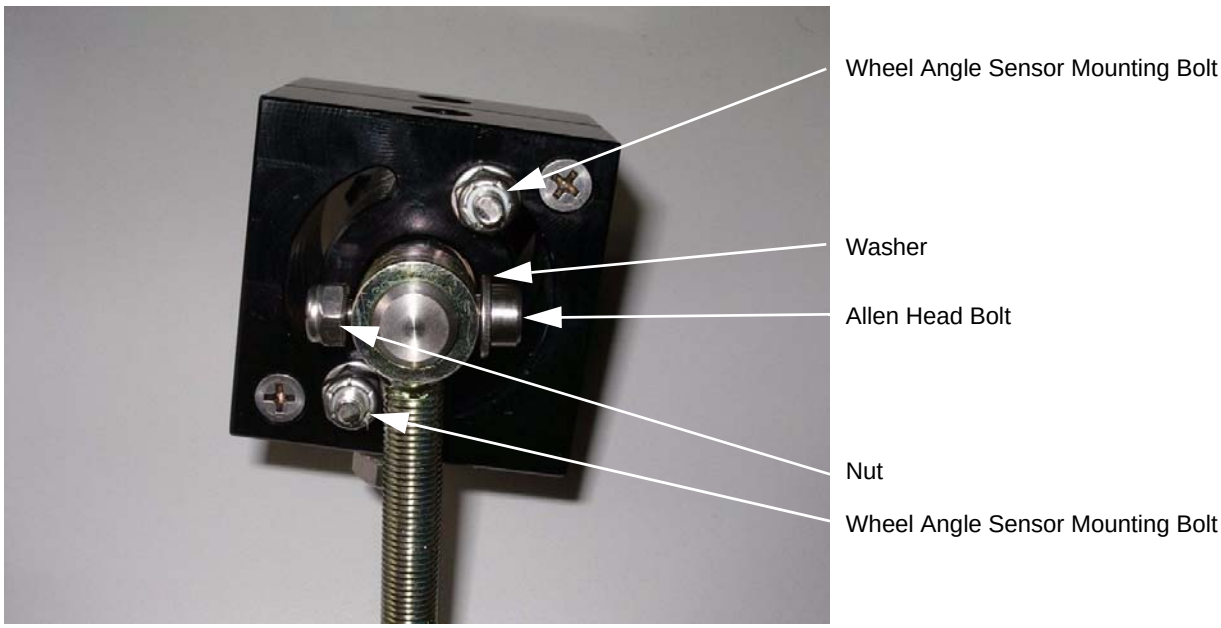


Attaching and Adjusting Wheel Angle Sensor Linkage Rods

1. Install the short linkage arm on the Wheel Angle Sensor shaft.
2. Attach the Wheel Angle Sensor linkage rod to the Wheel Angle Sensor. See *Figure 2-10*.

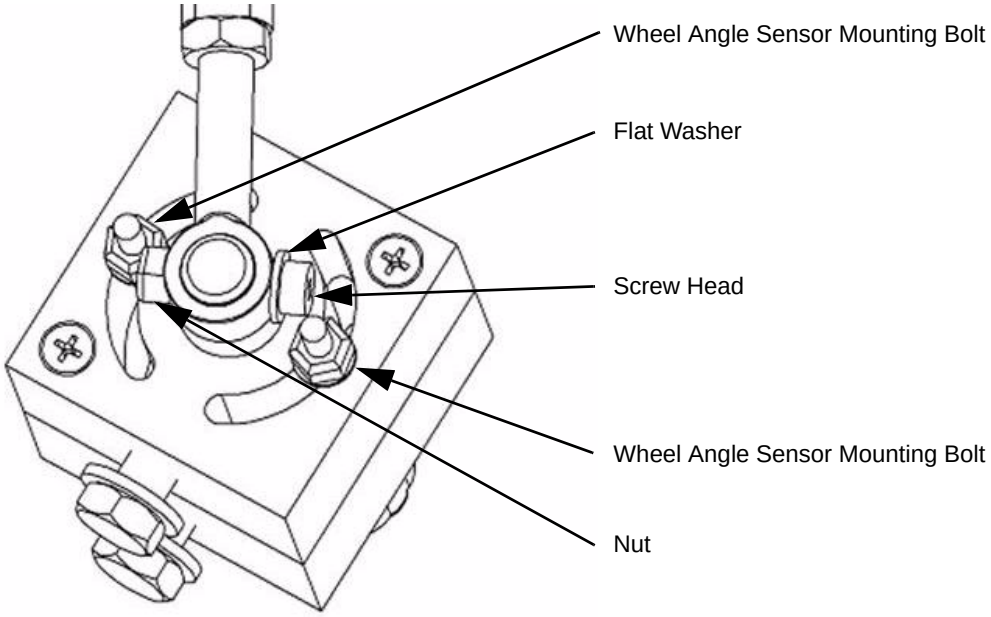
Note: Leave the Wheel Angle Sensor mounting bolts loose so the sensor can be rotated after installation on the vehicle.

Figure 2-10 Attaching the Linkage Arm to Sensor (shown on bench)



3. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 2-11*.

Figure 2-11 Washer on Shaft Screw



Note: The washer should be on the bolt head side and not the nut side of the assembly.

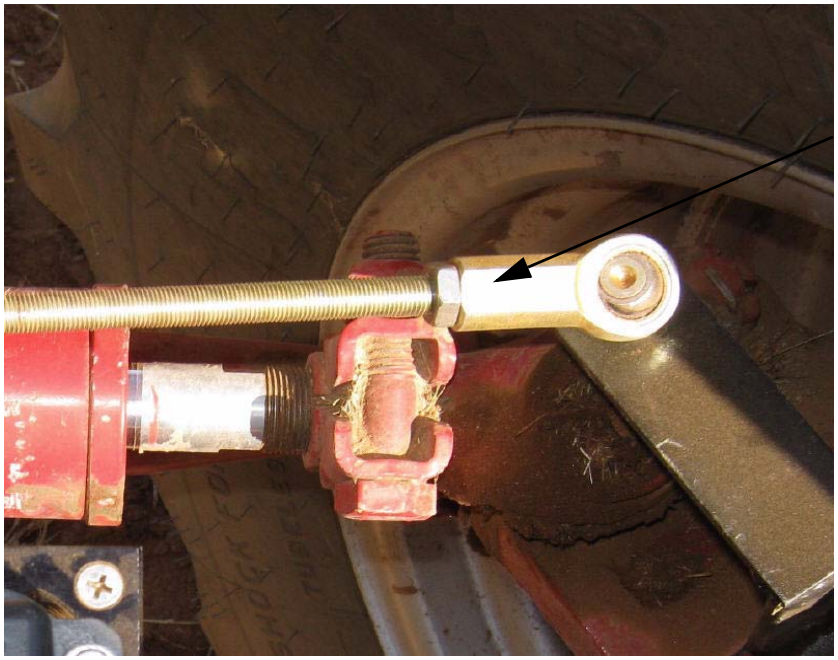
Note: Do not turn the steering system or drive the vehicle before the Wheel Angle Sensor has been adjusted using the AutoSteer Calibration screens. The potentiometer can only rotate a maximum of 180 degrees and if it is rotated beyond its mechanical stops, it will be permanently damaged.

Note: Do not attach the remaining linkage arm.

4. Attach the linkage rod to the linkage bracket using a ball joint. See *Figure 2-12*.
5. Tighten the ball joint to the bracket with a 1/2" and 9/16" wrench.

Note: Do not attach linkage rod to Wheel Angle Sensor rod at this time.

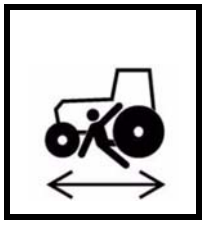
Figure 2-12 Linkage Rod Connected to Linkage Bracket



6. With the linkage rods disconnected, turn the steering wheel so the wheels are centered (the vehicle will travel straight ahead when moving).
7. Temporarily attach the linkage rods.

Note: Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering system manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering system is turned to the maximum right and left positions and then temporarily attached at these positions. Failure to leave the rods detached may cause the Wheel Angle Sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.



⚠ WARNING

Always shut down the vehicle when working around the steering axle and checking or adjusting the Wheel Angle Sensor rod lengths. The steering axle could move suddenly and cause severe injury or death.

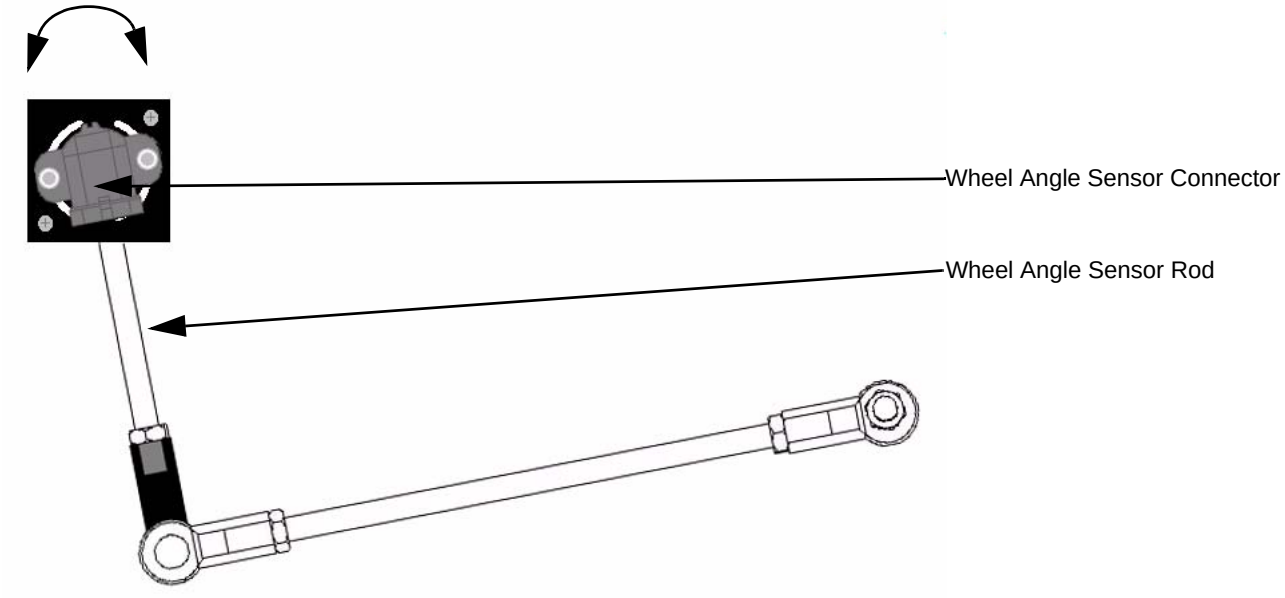
8. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 2-13*.

Note: The vehicle should be parked in a straight ahead position when adjusting the potentiometer angle.

9. Tighten the potentiometer bolts with a 3/8" wrench and 5/32" Allen wrench.

Note: The potentiometer connector is shown as a reference only. The connector can be positioned as shown or 180 degrees in the opposite direction. Use the position which enables the best cable connection.

Figure 2-13 Adjusting Potentiometer Angle



10. Disconnect the linkage rods and turn the steering wheel manually to the full left position.

11. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 2-14*,

12. Adjust the rod lengths as necessary.

Figure 2-14 Full Left Wheel Angle Sensor Test

13. Disconnect the linkage rods and turn the steering wheel manually to the full right position.

14. Reattach the linkage assembly and verify the sensor will not be damaged. See *Figure 2-15*.

15. Adjust the linkage rod lengths as necessary.

Figure 2-15 Full Right Wheel Angle Sensor Test

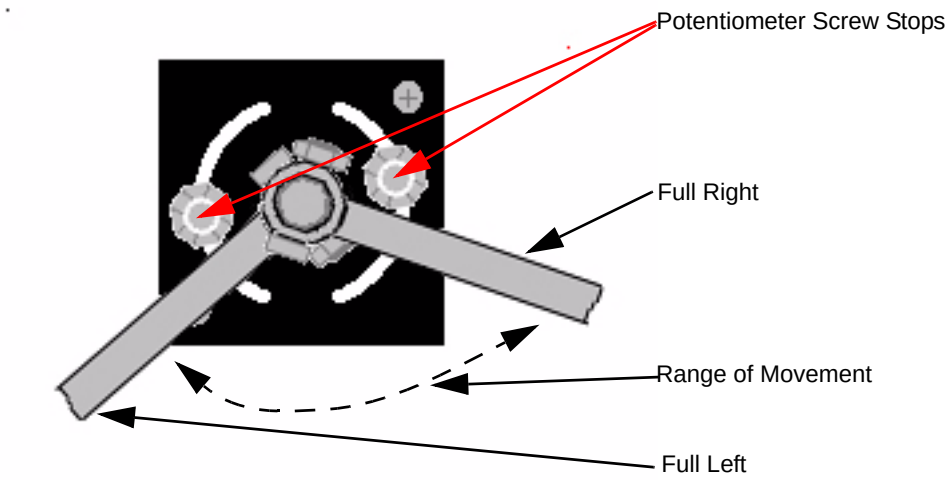
16. Repeat *Step 6.* through *Step 14.* until the rod lengths have been adjusted and the potentiometer is centered to get the maximum sensor movement.

17. Rotate the sensor, adjust the length of either linkage arm and/or reposition the sensor mounting bracket on the vehicle frame (if necessary) to get the maximum sensor movement.

18. Test the remaining linkage arm for length at hard left and hard right to ensure sensor travel is not exceeded.

Note: The maximum movement is reached when the Wheel Angle Sensor rod sweeps from approximately 3/16 inch (5mm) from both stop bolts when the steering system is turned to the maximum right and left positions. See *Figure 2-16.*

Figure 2-16 Maximum Sensor Movement (as seen from bottom)



Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 kilohms or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

---

19. When all adjustments are complete, tighten all linkage rod lock nuts and bolts and the Wheel Angle Sensor rod. See *Figure 2-17*.

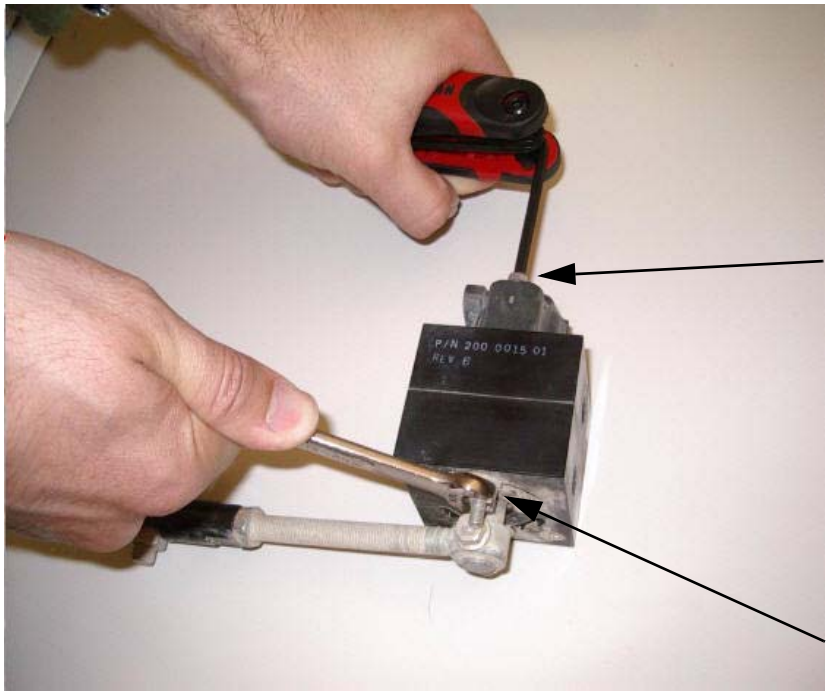
Note: A 1/2" and two 9/16" wrenches are required to tighten the connections.

Figure 2-17 Linkage Rod Ball Joint Bolt (different vehicle shown)

20. Tighten the two screws securing the potentiometer to the Wheel Angle Sensor, after final adjustments. See *Figure 2-18*.

Note: Use a 1/8" hex key and a 3/8" wrench.

Figure 2-18 Potentiometer Mounting Bolts (shown on bench)



21. The Wheel Angle Sensor installation in now complete. See *Figure 2-19*.

Figure 2-19 Wheel Angle Sensor Installed

Four Wheel Drive Installation

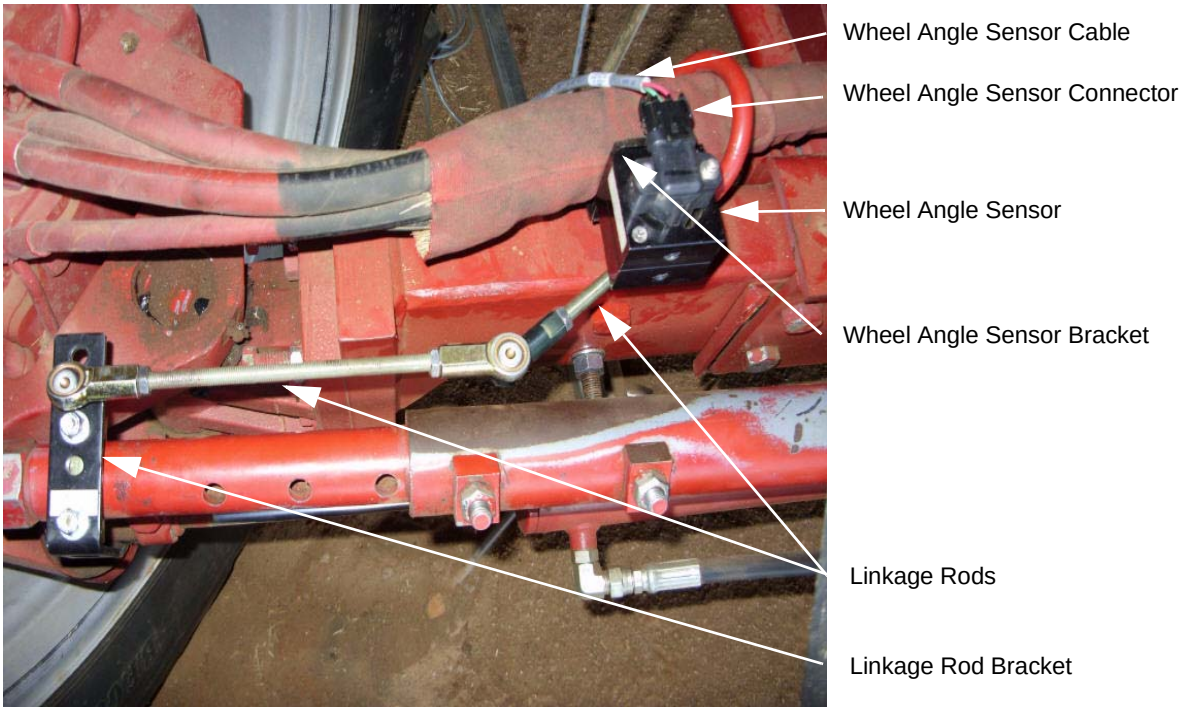
The Four Wheel Drive AutoSteer Wheel Angle Sensor installation procedure is provided in the following sub-sections:

- *Mounting Wheel Angle Sensor Hardware*
- *Cutting Linkage Rods to Length*
- *Assembling Linkage Rod Hardware*
- *Attaching and Adjusting Wheel Angle Sensor Linkage Rods*

Mounting Wheel Angle Sensor Hardware

1. The Wheel Angle Sensor components are shown in *Figure 2-20*.

Figure 2-20 Wheel Angle Sensor Components



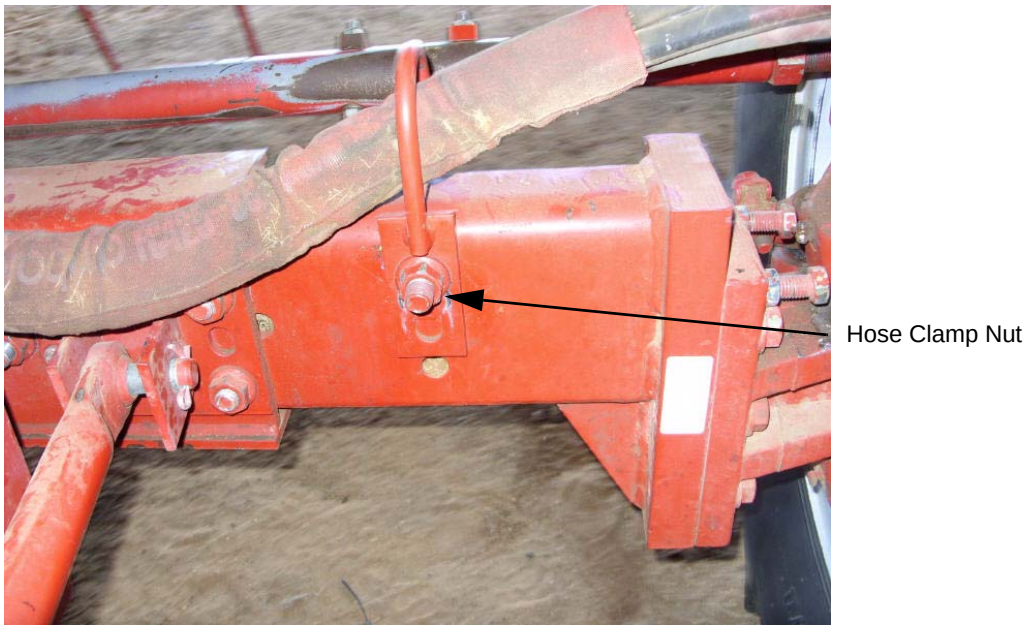
2. Identify the Wheel Angle Sensor mounting location.

Note: The Wheel Angle Sensor is located on the rear steer axle on the left hand side. It is bolted to the outer axle extension mounting holes See *Figure 2-20*.

---

3. Remove nut holding hydraulic hose clamp, using a 1 1/8" socket with a 3/4” drive socket wrench and breaker bar. See *Figure 2-21*.

Figure 2-21 Hydraulic Hose Clamp Nut



4. Place the bracket over the bolt. Use a 5/8 " x 4 ½ " UNC bolt, washer and nut supplied, in bottom hole so that the bracket is perpendicular to the ground. See *Figure 2-22*.

Figure 2-22 Mounting Wheel Angle Sensor Bracket

5. Place three large washers over bolt between the WAS bracket and the hose bracket. See *Figure 2-23*.

Figure 2-23 Placing Washers on Wheel Angle Sensor Bracket

6. Fit hose bracket in the best possible position so the hoses will not rub on the WAS bracket.
7. Tighten the bolt using a 1 1/8" socket, 3/4” rachet drive and breaker bar.
8. Tighten bottom bolt using a 15/16 socket, ratchet and wrench. See *Figure 2-24*.

Figure 2-24 Hose Bracket Reinstalled

9. Attach the Wheel Angle Sensor to the Wheel Angle Sensor bracket. See *Figure 2-25*.
10. Tighten bolts with a 9/16" wrench.

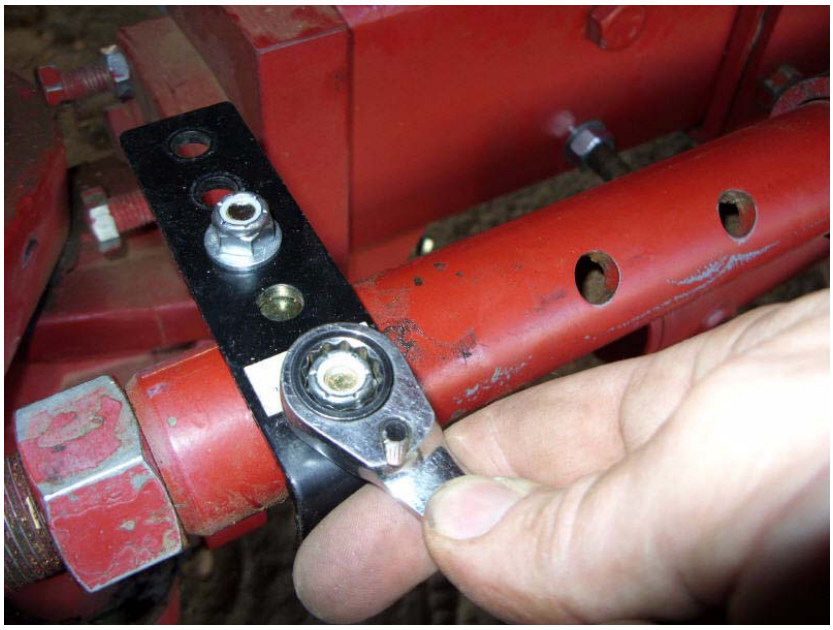
Figure 2-25 Attaching the Wheel Angle Sensor to the Bracket

11. Attach the linkage bracket to the drag link by using the 1 1/2" muffler clamp assembly. See *Figure 2-26*.

12. Position bracket horizontally approximately 1 inch (25mm) from the drag link lock nut.

13. Tighten the nuts using a 1/2" wrench. See *Figure 2-26*.

Figure 2-26 Attaching Linkage Bracket



Cutting Linkage Rods to Length

Note: Before cutting the linkage rods, verify the Wheel Angle Sensor brackets will attach to the vehicle as shown in this manual and they are attached the correct distance from any reference points shown. If this is not possible, do not cut the rods until it is determined if these lengths will work for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for ensuring the rods are cut to the proper length.

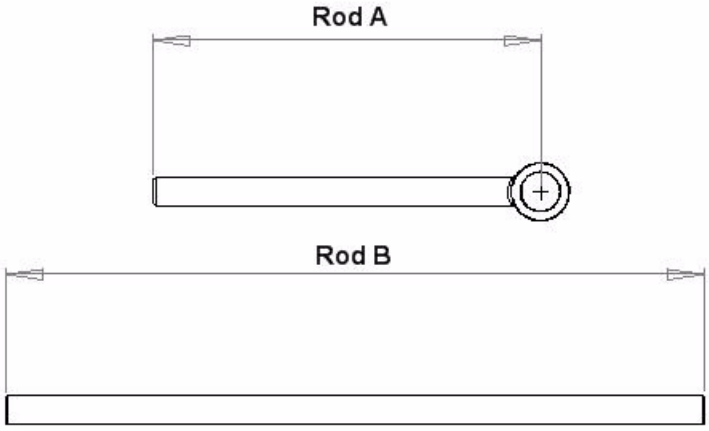
1. Measure and mark the two linkage rods for cutting, according to the length shown in *Figure 2-27*.

Note: *Figure 2-27* shows the measurement points used to properly cut the linkage rods.

Table 2-3 Linkage Rod Cut Lengths

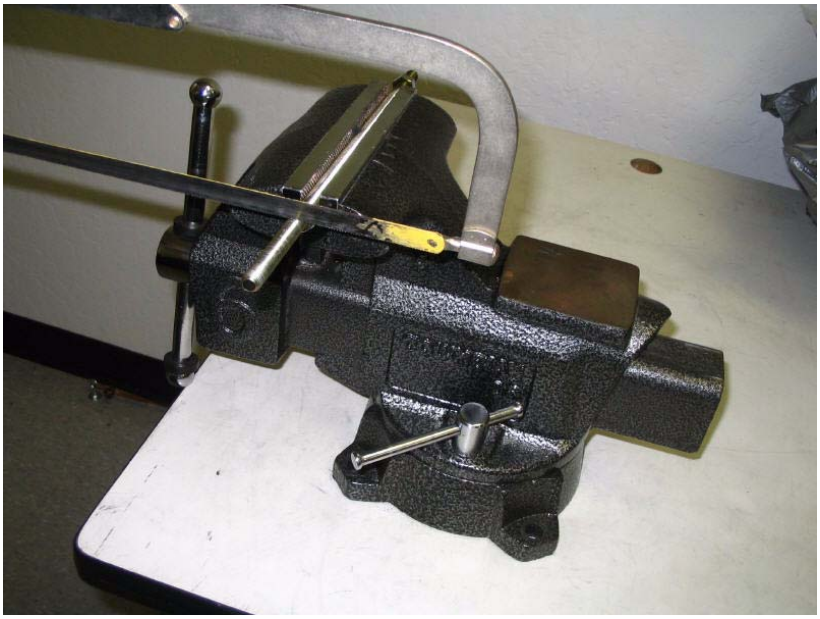
Item	Length
Rod A	3.7 inches (94 mm)
Rod B	8.3 inches (211 mm)

Figure 2-27 Linkage Rod Cut Length Measurement Points



2. Use a hack saw to cut the linkage rod to length while it is held in a bench vise. See *Figure 2-28*.

Figure 2-28 Linkage Rod Cutting

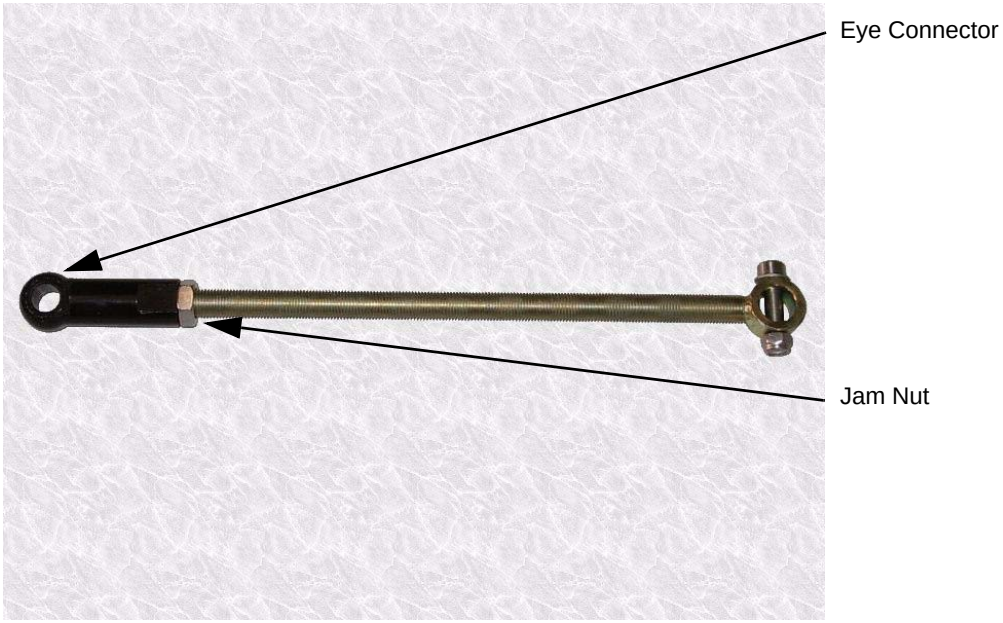


Assembling Linkage Rod Hardware

1. Attach a jam nut to the end of Rod A. See *Figure 2-29*.
2. Connect the eye connector to the end of the Wheel Angle Sensor rod. As shown in *Figure 2-29*.

Note: The threaded rods must be cut to the correct lengths before final assembly.

Figure 2-29 Rod A Assembled



3. Attach the jam nuts to each end of linkage Rod B
4. Attach the ball joints to both ends of the linkage arm as shown in *Figure 2-30*.

Note: The bolts for the ball joints should be facing the same direction as shown in *Figure 2-30*.

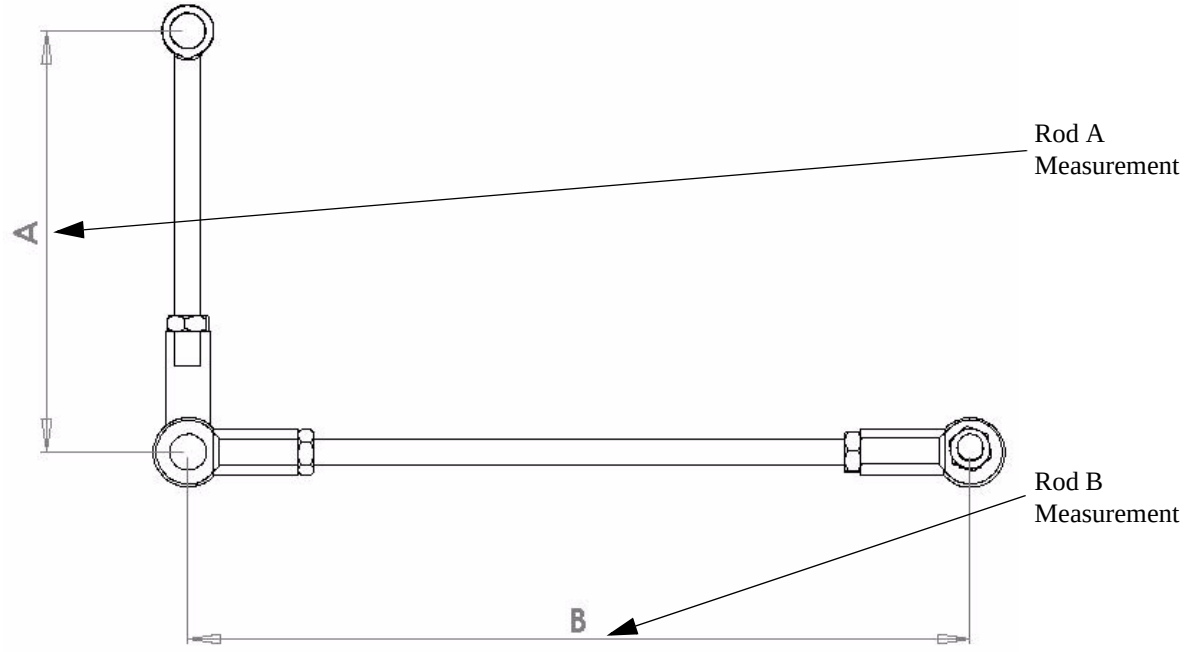
Figure 2-30 Linkage Rod Assembled

Note: The linkage rod after-assembly center-to-center lengths are shown in *Table 2-2*. *Figure 2-31* shows the measurement points for the assembled linkage rods.

Table 2-4 Assembled Linkage Rod Length

Item	Length
Rod A	4.7" (119mm)
Rod B	10.2" (259mm)

Figure 2-31 Linkage Rod Measurement Points (Assembled)

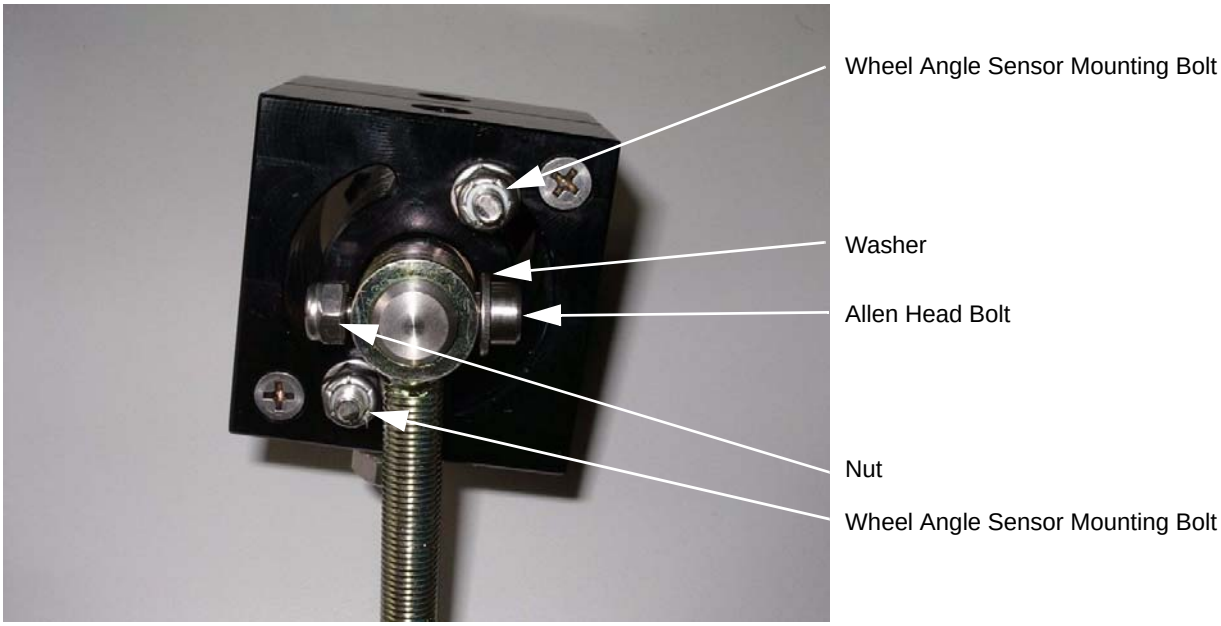


Attaching and Adjusting Wheel Angle Sensor Linkage Rods

1. Install the short linkage arm on the Wheel Angle Sensor shaft.
2. Attach the Wheel Angle Sensor linkage rod to the Wheel Angle Sensor. See *Figure 2-32*.

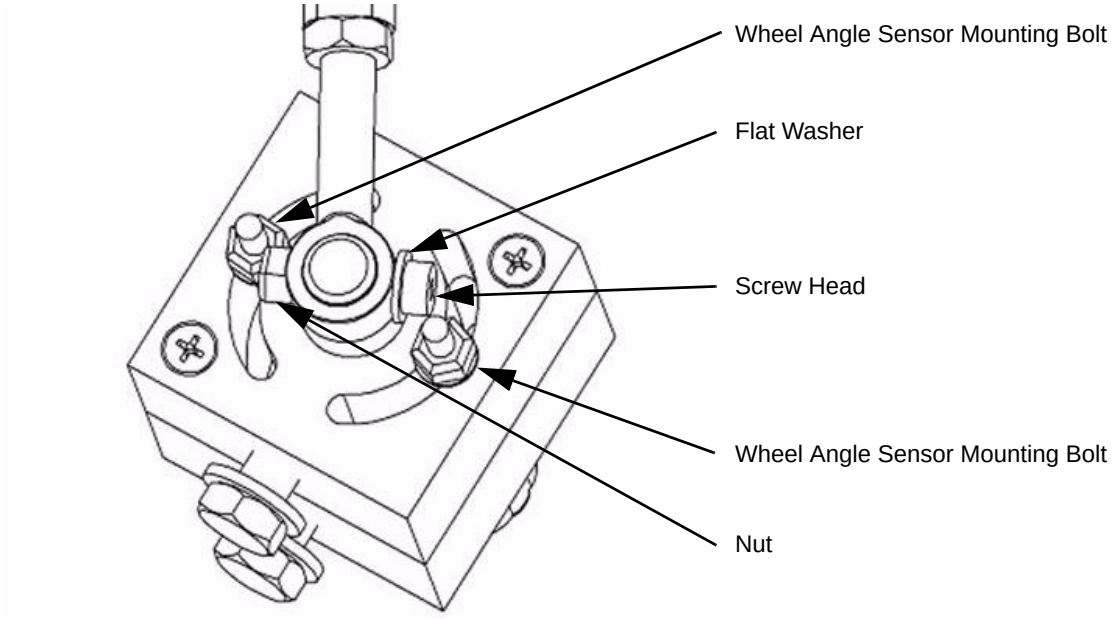
Note: Leave the Wheel Angle Sensor mounting bolts loose so the sensor can be rotated after installation on the vehicle.

Figure 2-32 Attaching the Linkage Arm to Sensor (shown on bench)



3. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 2-33*.

Figure 2-33 Washer on Shaft Screw



Note: The washer should be on the bolt head side and not the nut side of the assembly.

4. Tighten the connection with a 3/8" wrench and 1/8" Allen wrench. See *Figure 2-34*.

Note: The rod should point towards the vehicle rear.

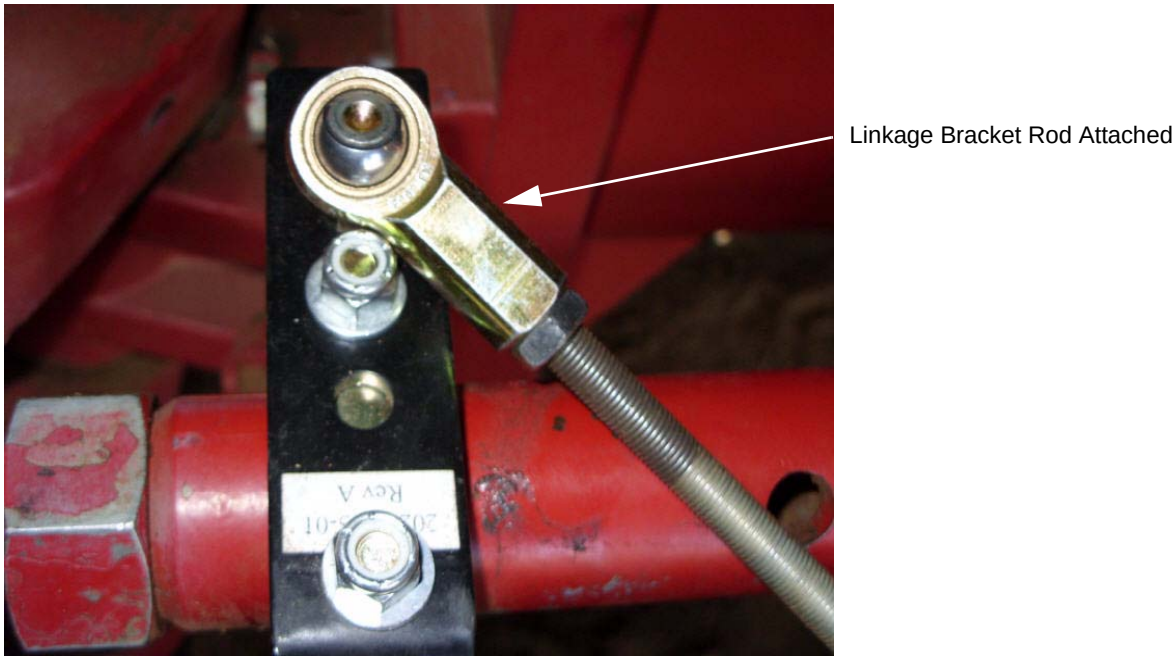
Figure 2-34 Tightening Wheel Angle Sensor Linkage Rod Connection

Note: Do not turn the steering system or drive the vehicle before the Wheel Angle Sensor has been adjusted using the AutoSteer Calibration screens. The potentiometer can only rotate a maximum of 180 degrees and if it is rotated beyond its mechanical stops, it will be permanently damaged.

5. Attach the linkage arm to the linkage bracket and tighten the ball joint to the bracket with a 1/2" and 9/16" wrench. See *Figure 2-35*.

Note: Do not attach linkage rod to Wheel Angle Sensor linkage rod at this time.

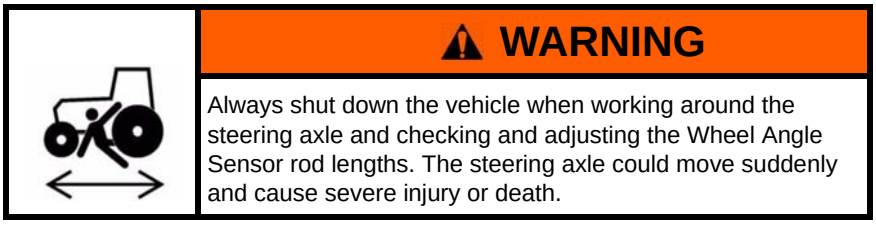
Figure 2-35 Linkage Rod Connected to Bracket



6. With the linkage rods disconnected, turn the steering wheel so the wheels are centered (the vehicle will travel straight ahead when moving).
7. Temporarily attach the linkage rods.

Note: Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering system manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering system is turned to the maximum right and left positions and then temporarily attached at these positions. Failure to do this may cause the Wheel Angle Sensor or vehicle to become damaged.

Note: After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.



⚠ WARNING

Always shut down the vehicle when working around the steering axle and checking and adjusting the Wheel Angle Sensor rod lengths. The steering axle could move suddenly and cause severe injury or death.

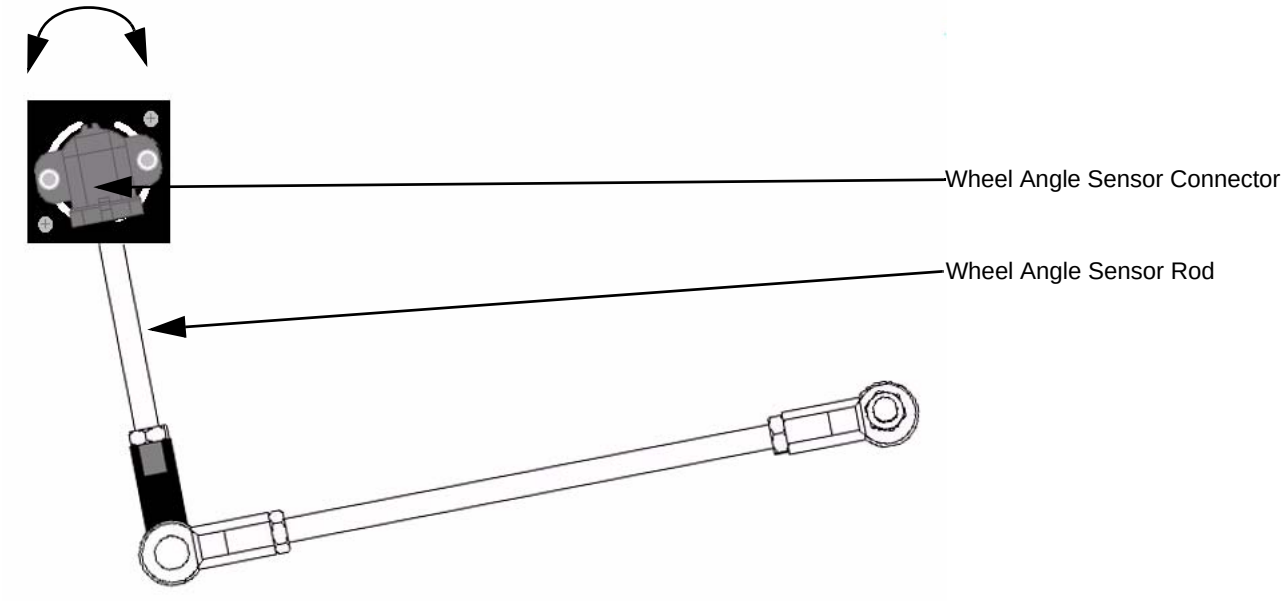
8. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 2-36*.

Note: The vehicle should be parked in a straight ahead position when adjusting the potentiometer angle.

9. Tighten the potentiometer bolts with a 3/8" wrench and 5/32" Allen wrench.

Note: The potentiometer connector is shown as a reference only. The connector can be positioned as shown or 180 degrees in the opposite direction. Use the position which enables the best cable connection.

Figure 2-36 Adjusting Potentiometer Angle

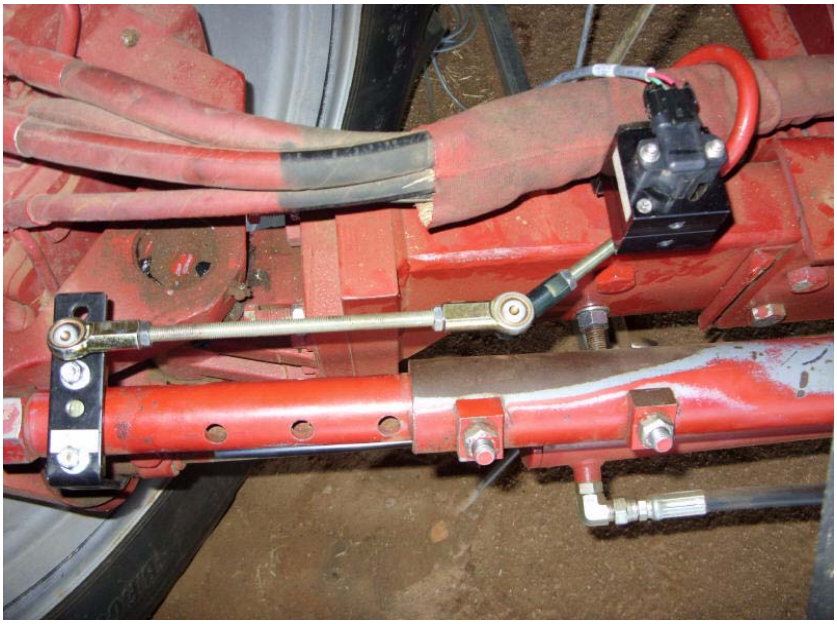


10. Disconnect the linkage rods and turn the steering wheel manually to the full left position.

11. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 2-37*.

12. Adjust the rod lengths as necessary.

Figure 2-37 Full Left Wheel Angle Sensor Test

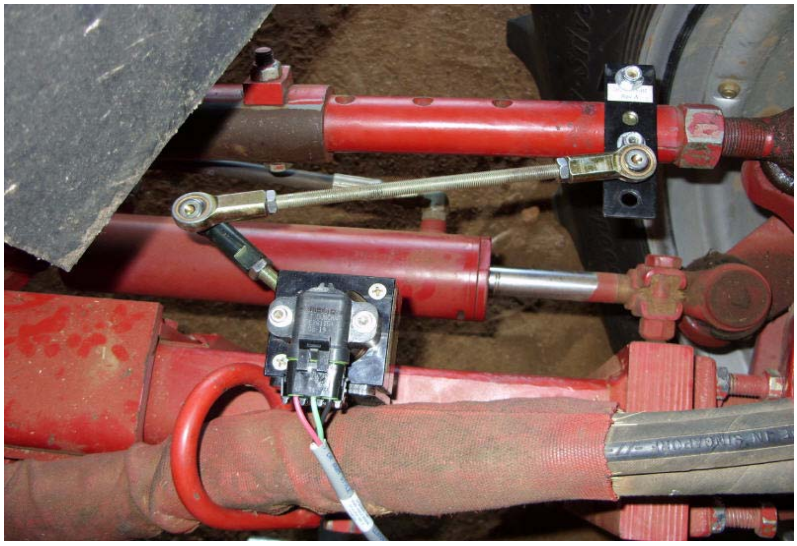


13. Disconnect the linkage rods and turn the steering wheel manually to the full right position.

14. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 2-38*.

15. Adjust the linkage rod lengths as necessary.

Figure 2-38 Full Right Wheel Angle Sensor Test

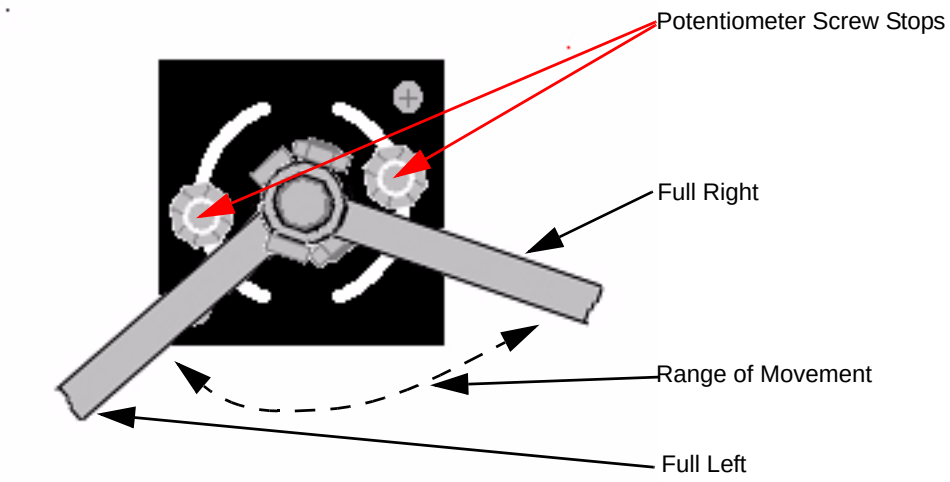


16. Rotate the sensor, adjust the length of either linkage arm and/or reposition the sensor mounting bracket on the vehicle frame (if necessary) to get the maximum sensor movement.

17. Test the remaining linkage arm for length at hard left and hard right to ensure sensor travel is not exceeded.

Note: The maximum movement is reached when the Wheel Angle Sensor rod sweeps from approximately 3/16 inch (5mm) from both stop bolts when the steering system is turned to the maximum right and left positions. See *Figure 2-39*.

Figure 2-39 Maximum Sensor Movement (as seen from bottom)



Note: An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 kilohms or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

18. When all the adjustments are complete, tighten all linkage rod lock nuts and bolts and the Wheel Angle Sensor rod. See *Figure 2-40*.

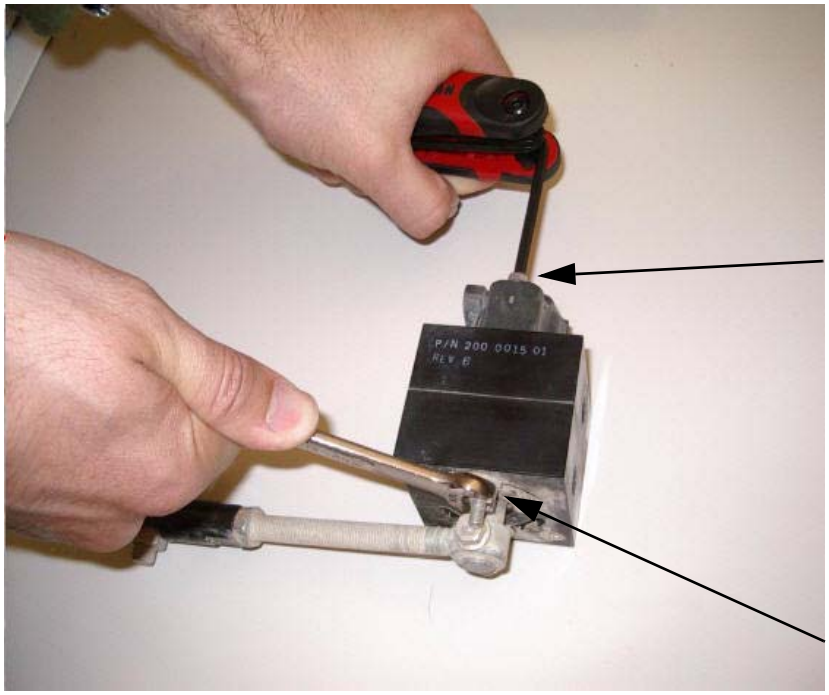
Note: A 1/2" and two 9/16" wrenches are required to tighten the connections.

Figure 2-40 Linkage Rod Ball Joint Bolt (different vehicle shown)

19. Tighten the two screws securing the potentiometer to the Wheel Angle Sensor after final adjustments. See *Figure 2-41*.

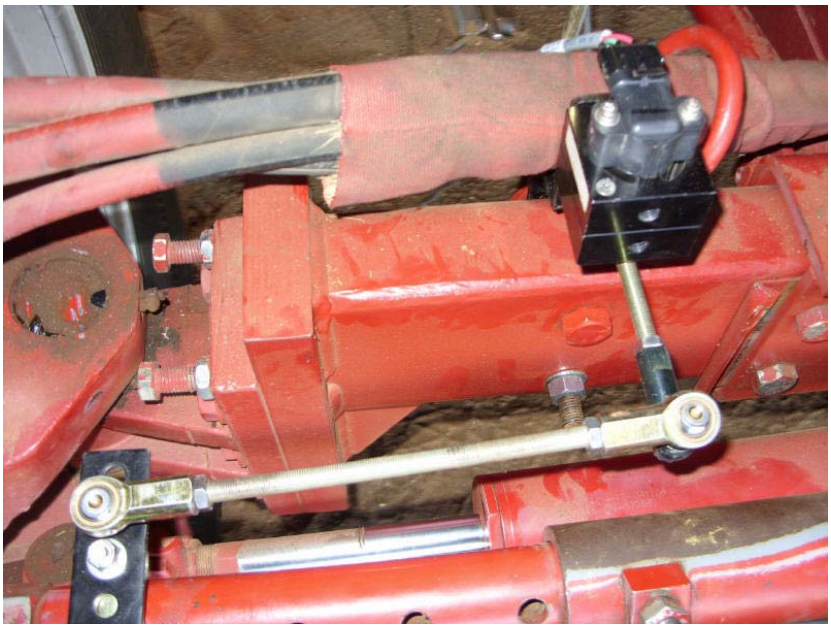
Note: Use a 1/8" hex key and a 3/8" wrench.

Figure 2-41 Potentiometer Mounting Bolts (shown on bench)



20. The Wheel Angle Sensor is now installed. See *Figure 2-42*.

Figure 2-42 Wheel Angle Sensor Installed



SA Module Installation

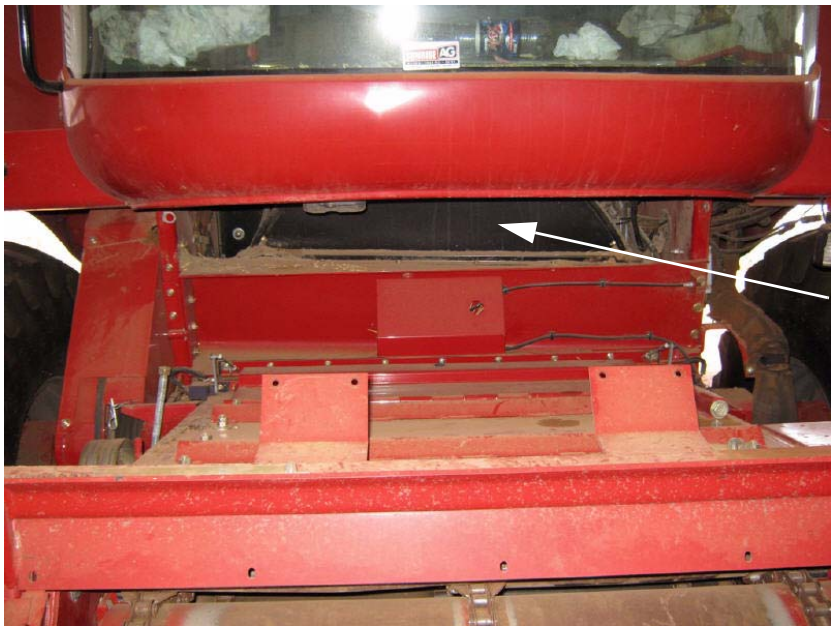
This **SA Module Installation** chapter contains information on installing the AutoSteer SA Module.

Installation Procedure

Note: The following instructions provide recommended SA Module mounting instructions. However due to the variety of options available on vehicles and the possible configuration differences, it may be necessary to install the SA Module in an alternative location. If an alternative location is required, choose a location where the SA Module is protected from damage from moving parts or crop debris and excessive moisture from weather and cleaning equipment.

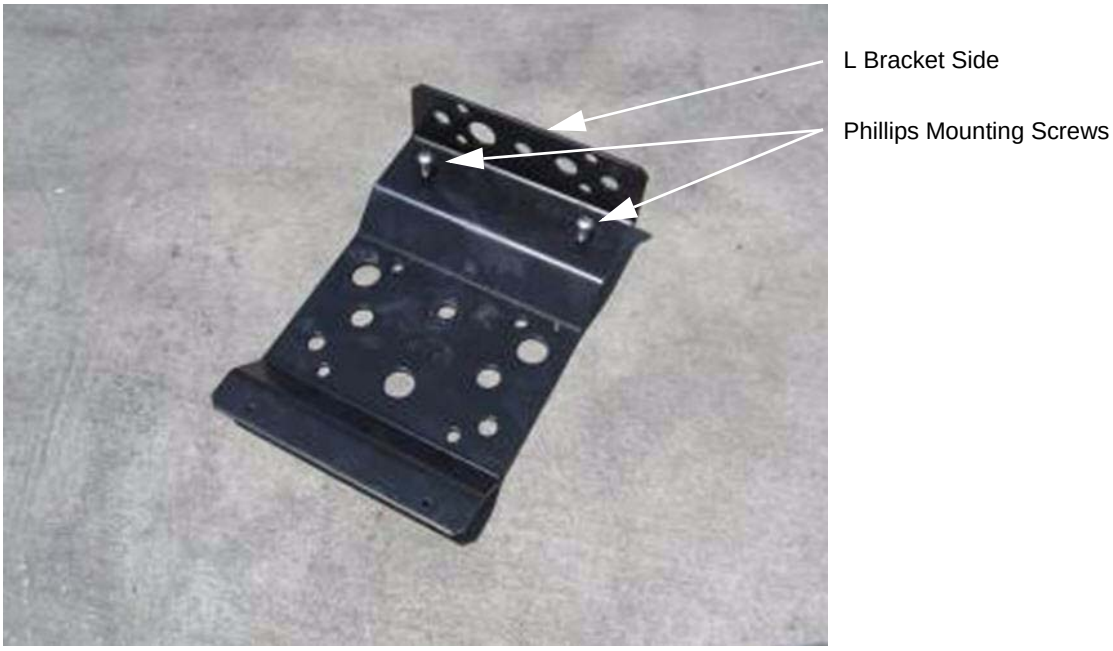
1. Locate the space just below the cab front. See *Figure 3-1*.

Figure 3-1 Mounting Location



2. Attach two phillips screws on the "L" bracket side of the SA Module bracket. See *Figure 3-2*.

Figure 3-2 Mounting Screws on SA Module Bracket

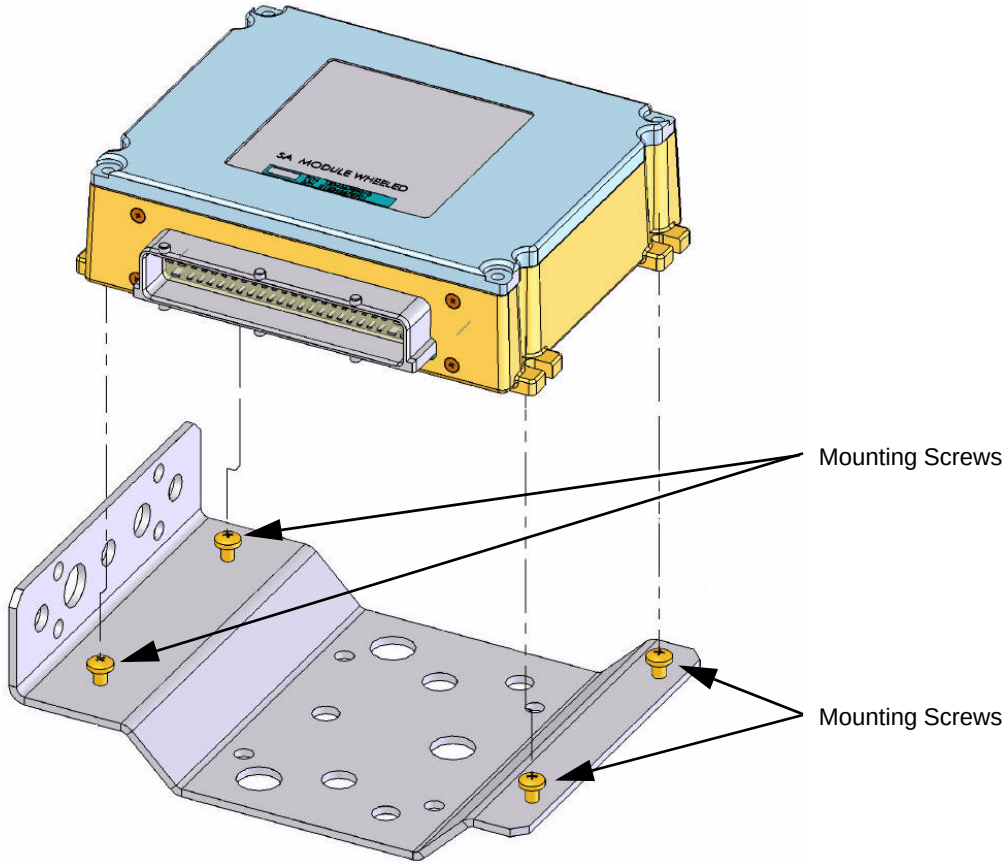


3. Locate and remove the bolt pointed downward to use for mounting the SA Module Bracket. See *Figure 3-3*.

Figure 3-3 Existing Bolt to Use For SA Module Bracket Mounting

4. Mount the SA Module to the SA Module bracket using the screws provided and a #2 Phillips screwdriver. See *Figure 3-4*.

Figure 3-4 Mounting SA Module to Bracket



5. Mount the SA Module Bracket with SA Module attached as shown using bolt and nut previously removed. See *Figure 3-5*.
6. Tighten with a rachet and 13mm socket.

Figure 3-5 Mounting SA Module Bracket to Vehicle

7. *Figure 3-6* shows the SA Module mounted.

Figure 3-6 SA Module Mounted

Note: *Figure 3-7* and *Figure 3-8* show the correct and incorrect SA Module installation orientation.

Figure 3-7 Correct SA Module Orientation

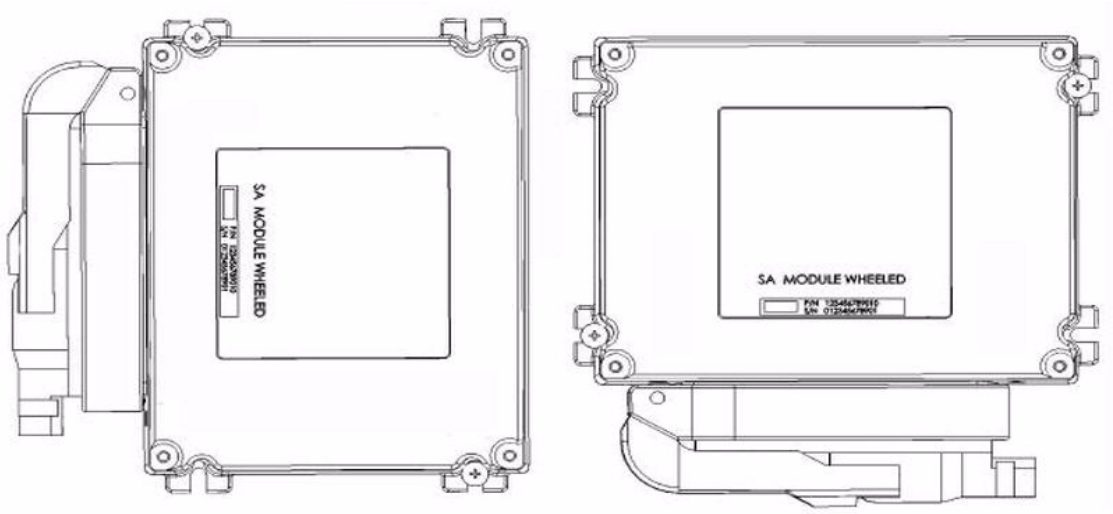
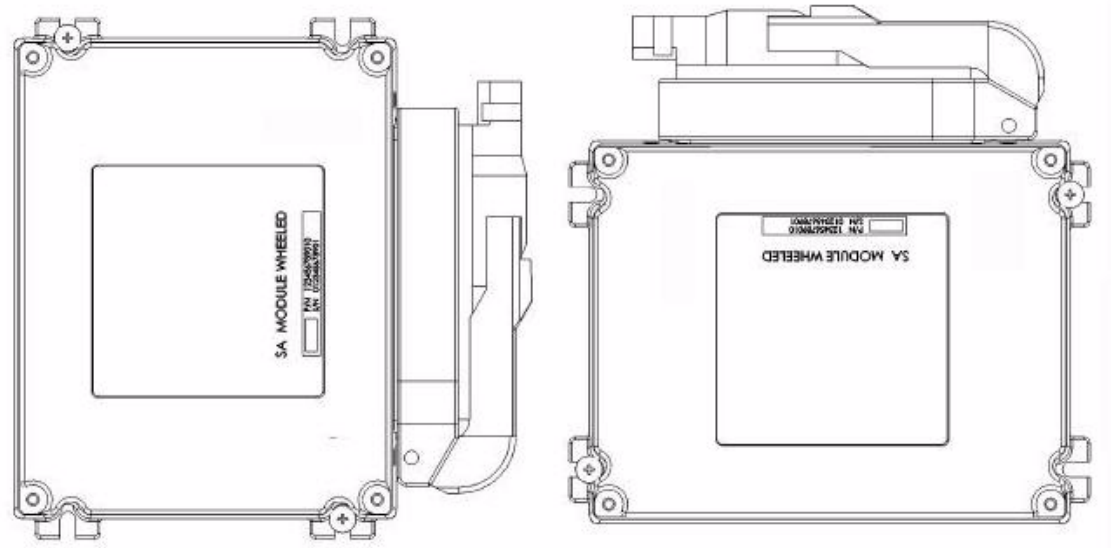


Figure 3-8 Incorrect SA Module Orientation



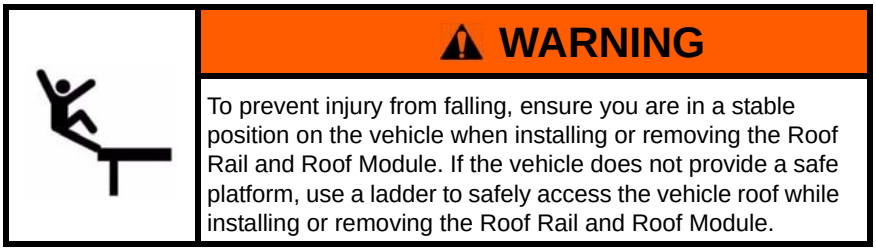
Roof Module Installation

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Installation Procedure*

Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 kph).
- Ensure you are in a safe position when attempting to access the cab roof. If necessary for safety, use a ladder to access the roof. Ensure you do not fall or drop the Roof Module.


WARNING
To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.

Installation Procedure

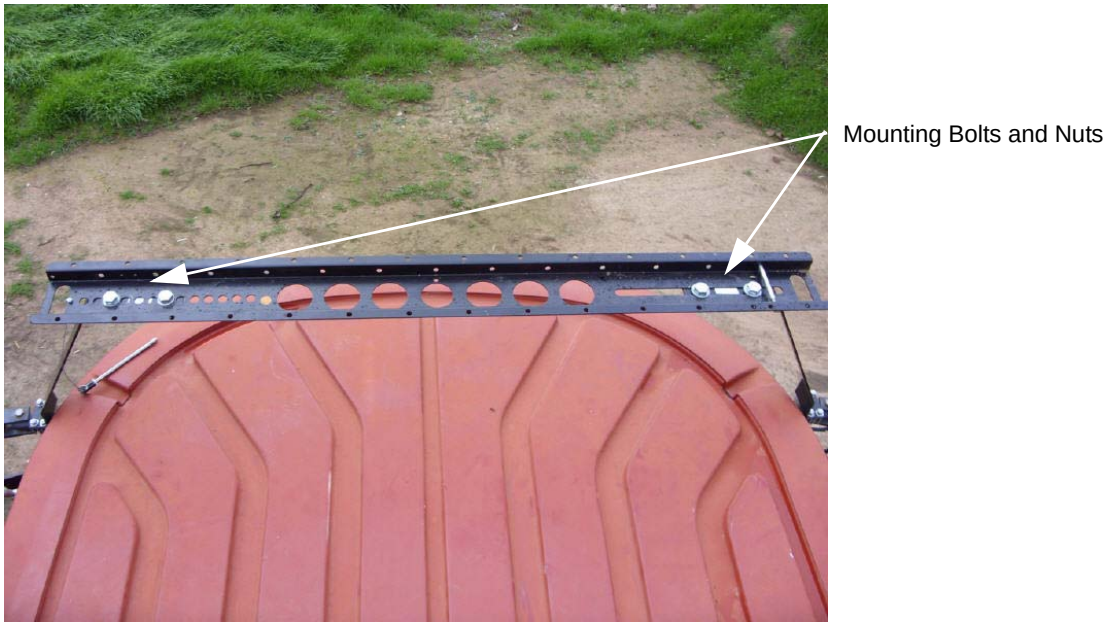
1. Attach the Roof Module brackets to both vehicle mirror mounts using the four U-bolts. See *Figure 4-1*.

Note: Do not completely tighten the U-bolts until the roof array is mounted and aligned over the brackets.

Figure 4-1 Roof Brackets Mounted on Mirror Mount

2. Attach the Roof Module bracket using bolts, nuts and washers supplied.
3. Tighten securely with a 15/16" socket and ratchet. See *Figure 4-2*.

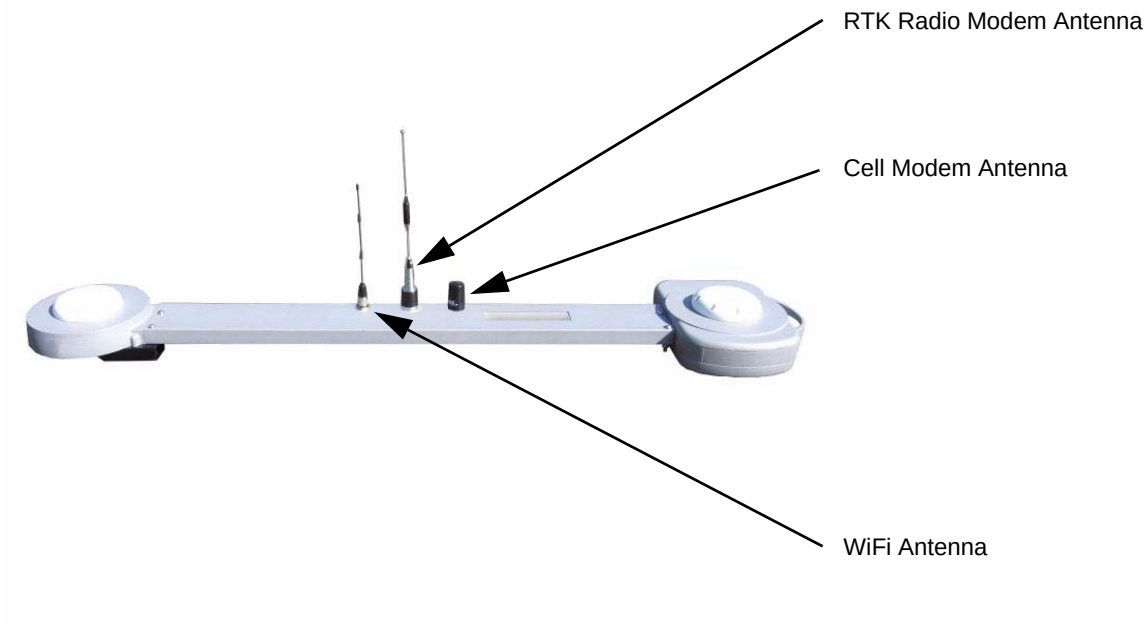
Figure 4-2 Attaching the Roof Rail with Bolts



4. Attach the three antennas to the correct Roof Module antenna connections. See *Figure 4-3*.

Note: Hand tighten the connections. Do not use tools or over tighten.

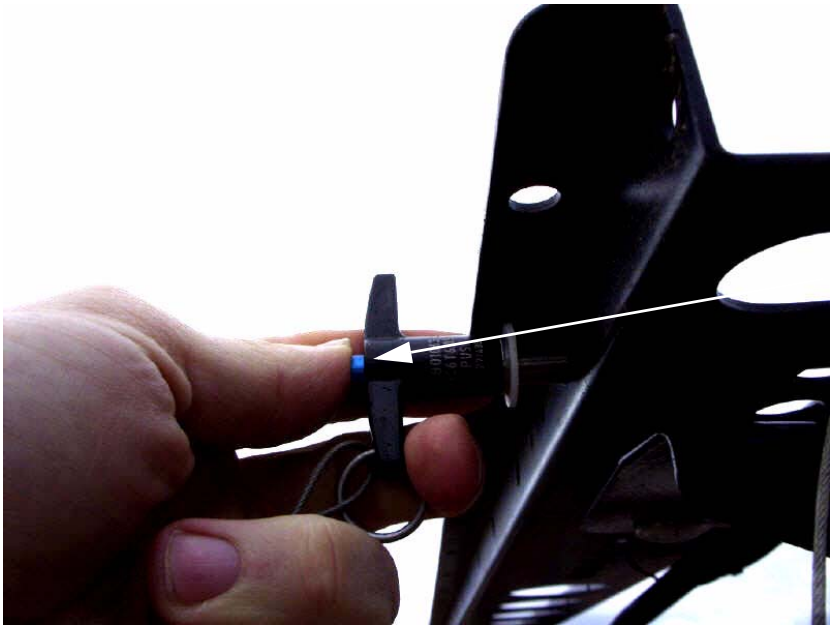
Figure 4-3 Antennas Attached to the Roof Module



5. Remove the locking pin from the Roof Rail. See *Figure 4-4*.

Note: Press the Locking Pin release button to enable pin removal.

Figure 4-4 Removing the Quick Release Pin



6. Place the Roof Module on the Roof Rail. See *Figure 4-5*.

Figure 4-5 Mounting Roof Module on Roof Rail

7. Reinsert the locking pin. See *Figure 4-6*.
8. Test the tightness of the Roof Module from side-to-side.

Figure 4-6 Reinserting the Locking Pin

9. The Roof Module is now installed. See *Figure 4-7*.

Figure 4-7 Roof Module Installed

Display Installation

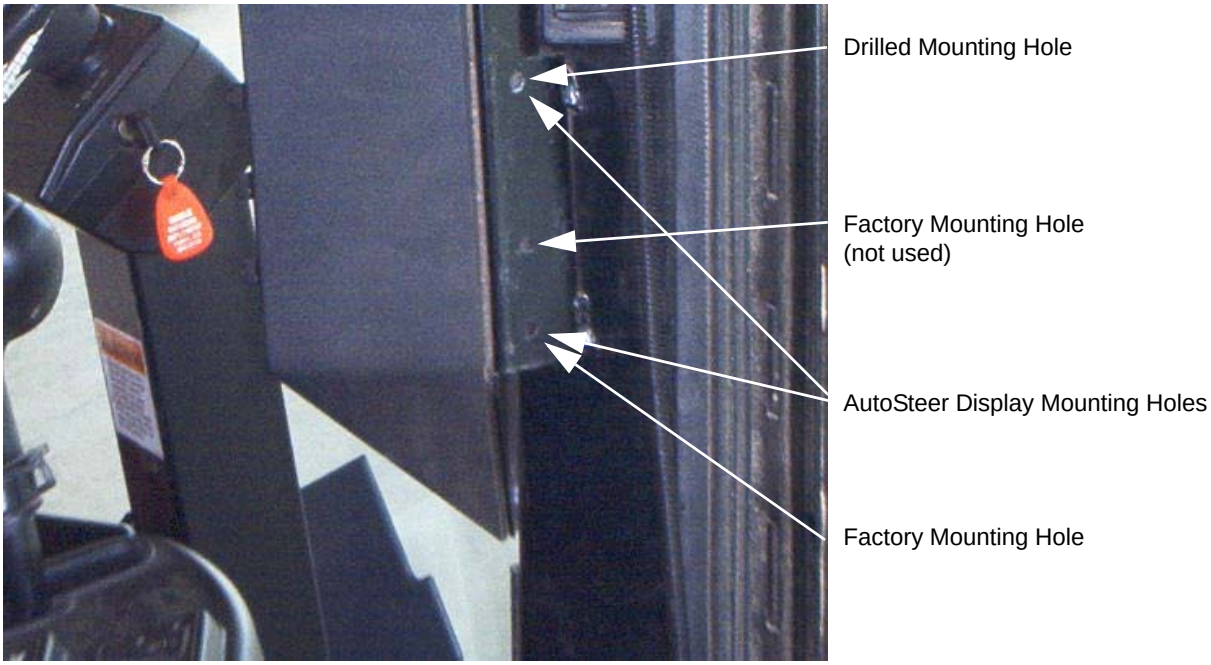
This **Display Installation** chapter contains information for installing the Display

1. Locate the welded steel plate located on the cab right side post. See *Figure 5-1*.
2. Drill an extra 5/16" hole in this position.

Note: Use the steel Display bracket as a template for drilling the hole.

Note: Alternative mounting locations can be used if the location shown is not available.

Figure 5-1 Mounting Holes on Cab Post



3. Attach the Display bracket to the front corner post using the two kit provided M8 x 25 bolts, nuts and washers. See *Figure 5-2*.
4. Tighten the bolts with a 13mm socket and ratchet and 13mm wrench. See *Figure 5-2*.

Figure 5-2 Display Mounting Bracket Installed

5. Attach the RAM mount to the Display mounting bracket. See *Figure 5-3*.
6. Secure the Ram base using four 10-32X3/4 Phillip screws and lock nuts.
7. Tighten the screws using a #2 Phillips screw driver and a 3/8 wrench. See *Figure 5-3*.

Figure 5-3 Attaching the RAM Mount to the Display Bracket

Note: Refer to the Display User Manual for the remaining Display specific installation instructions.

Connecting System Cables

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to various vehicle and AutoSteer components in the following sections:

- *SA Module Harness*
  - *SA Module Connection*
  - *AutoSteer Wheel Angle Sensor Connection*
  - *Steering Valve and Flow Switch Connection*
- *Main Cable Harness*
  - *Roof Module*
  - *Display*
  - *Power Supply Connection*
    - *12V Cab Power Outlet*
    - *Battery Power Connection*
- *Install Warning Label*

SA Module Harness

This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *AutoSteer Wheel Angle Sensor Connection*
- *Steering Valve and Flow Switch Connection*

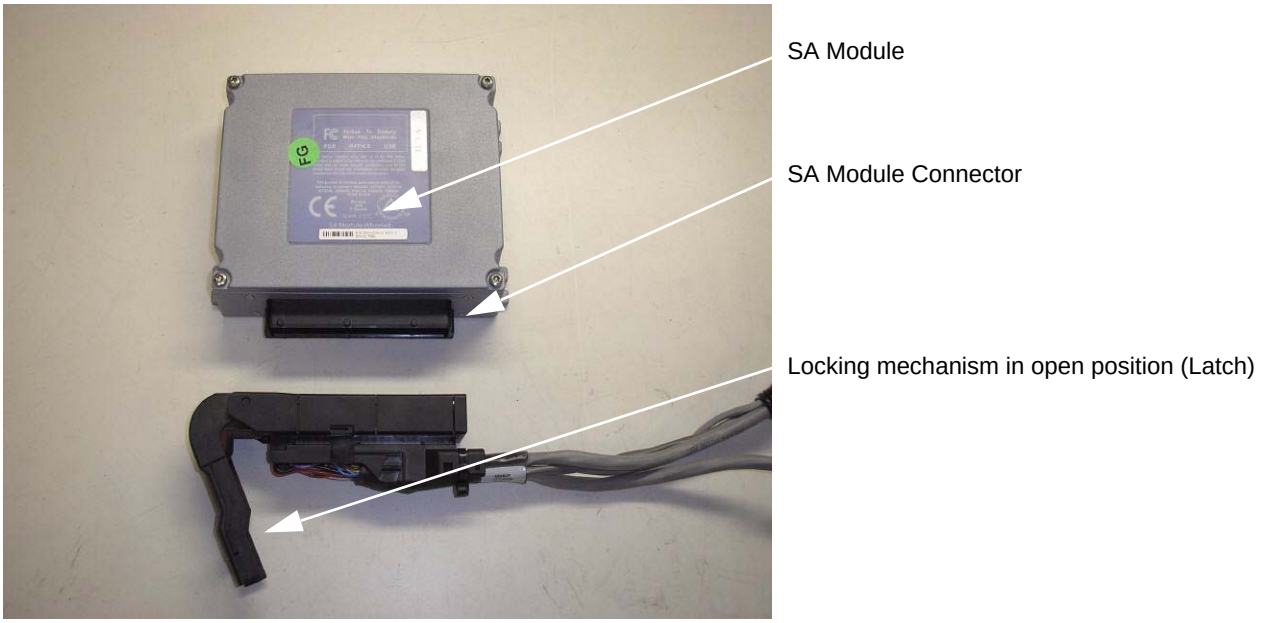
SA Module Connection

1. Locate the previously mounted SA Module. See *Figure 6-1*.

Figure 6-1 SA Module Connector

2. Align the SA Module Harness connector to the SA Module. See *Figure 6-2*.
3. Open the connector latch lever. See *Figure 6-2*.

Figure 6-2 Connecting SA Module Connector (shown on bench)



4. Press the SA Module Harness connector onto the SA Module connector.

Note: You can damage the connectors if your force them into position. Do not force them together or use tools.

5. Press the latch lever closed until it clicks and locks the connector. See *Figure 6-3*.

Figure 6-3 Closing the SA Module Connector

Note: If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

6. Close the cable connector locking mechanism as shown in *Figure 6-4*.

Figure 6-4 SA Module Connector (closed).

7. The SA module is now connected.

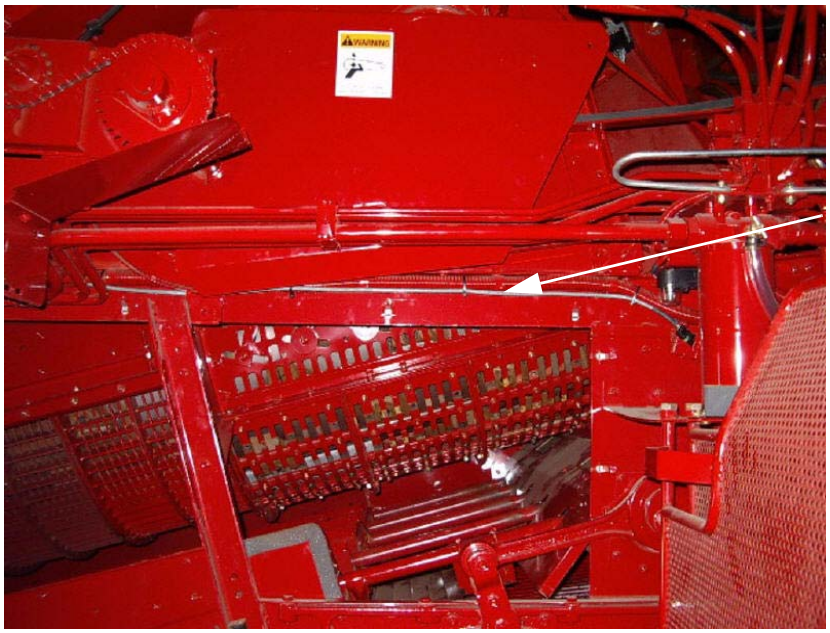
8. Proceed to the *AutoSteer Wheel Angle Sensor Connection* procedure.

AutoSteer Wheel Angle Sensor Connection

1. Route the SA Module Wheel Angle Sensor cable along the combine frame left side and secure it with cable ties. See *Figure 6-5*.

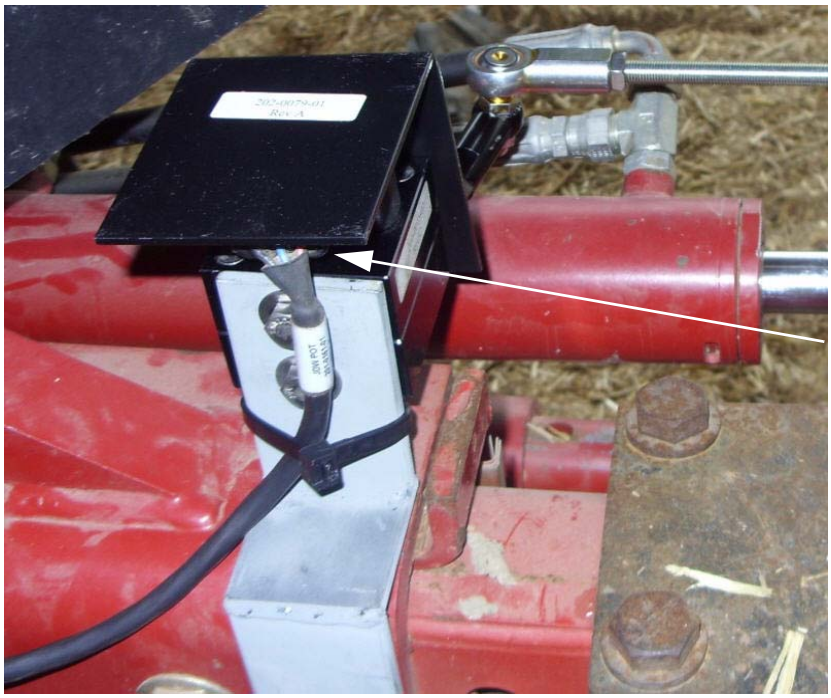
Note: If the SA Module Harness does not reach the Wheel Angle Sensor an extension harness is available. PN: 201-0120-01

Figure 6-5 Routing SA Module Harness to the Wheel Angle Sensor



2. Attach the SA Module Harness Wheel Angle Sensor connector to the Wheel Angle Sensor. See *Figure 6-6*.

Figure 6-6 Wheel Angle Sensor Connection



3. Secure all cables with cable ties.

Steering Valve and Flow Switch Connection

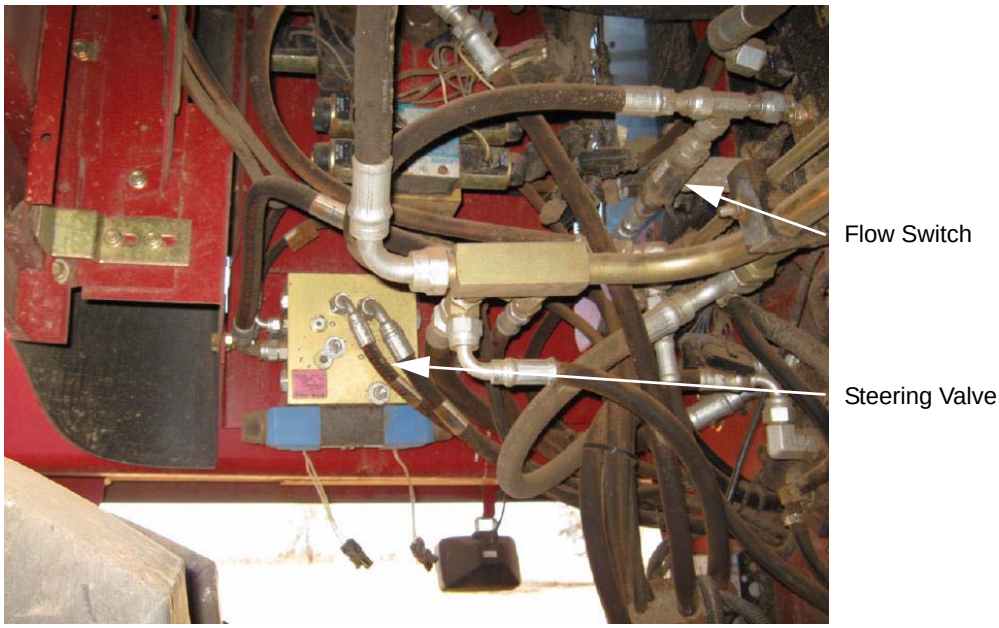
1. Identify the location of the AccuGuide hydraulic valve and flow switch, located on the vehicle left hand side.

Figure 6-7 Steering Valve Location

2. Route and secure the steering cable from the SA Module to the Steering Valve. See *Figure 6-8*.

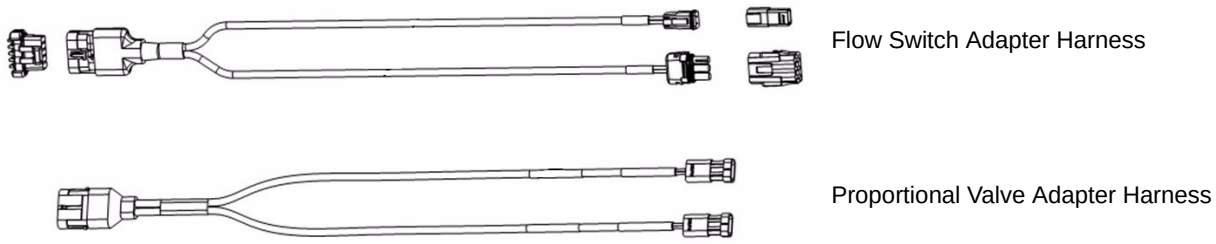
3. Separate the Steering Valve and flow switch cables from the factory wiring harness.

Figure 6-8 Steering Valve Location



4. Connect the two adapter cables to the SAM harness valve connectors.

Figure 6-9 SA Module Harness Adapter Cables



5. Connect the valve adapter cable Left and Right connectors. See *Figure 6-10*.

Figure 6-10 Steering Valve Adapter Cables

Note: This installation does not require a Pressure Transducer.

6. Connect the 3-pin connector to the flow switch. See *Figure 6-11*.

Figure 6-11 Connecting SA Module Harness to Flow Switch

7. Connect the Flow Switch adapter harness to the SA Module Harness 10-pin connector. See *Figure 6-12*.

Note: Attach blanking the connectors supplied in the kit on unused connectors.

Figure 6-12 Connecting the Flow Switch Adapter Harness

Main Cable Harness

This **Main Cable Harness** section contains the following sub-sections:

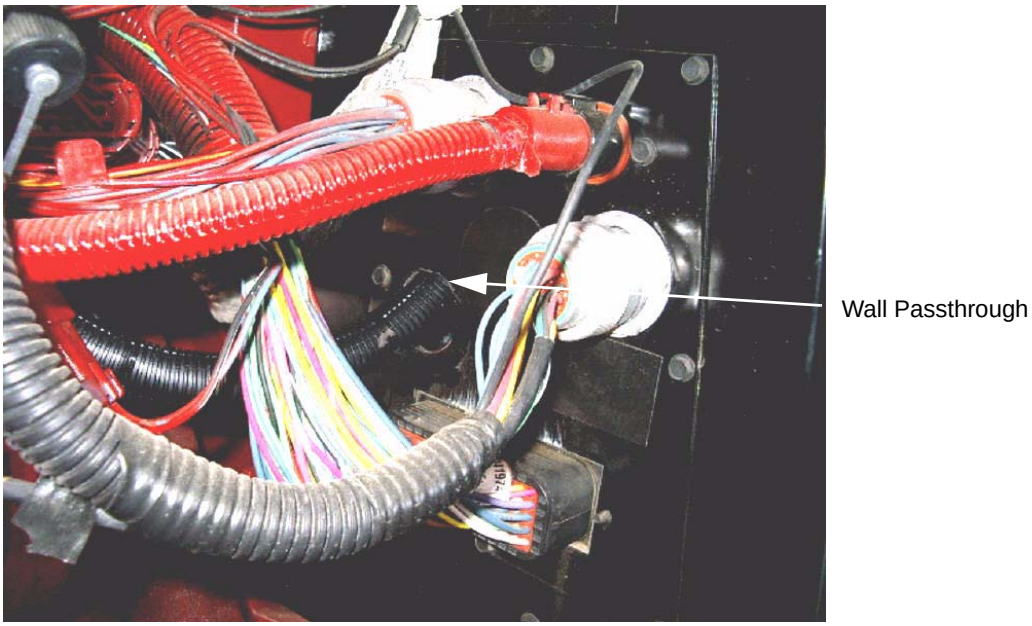
- *Roof Module*
- *Display*
- *Power Supply Connection*

Roof Module

1. Route the antenna cable and SA Module connectors through existing holes in the cab wall on the right hand side. See *Figure 6-13*.

Note: If necessary, drill a 1- 1/2" diameter hole in the cab floor or wall using a hole saw. Use a rubber grommet to protect the cables passing through the hole. See *Figure 6-13*.

Figure 6-13 Passing Cable Through Cab Wall Access Hole

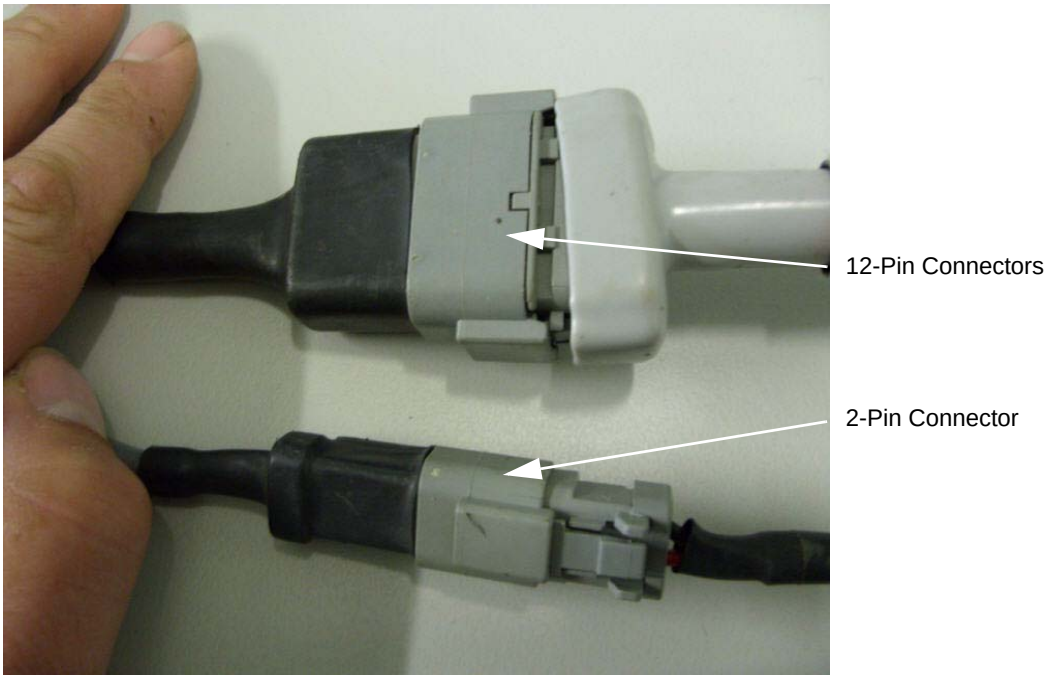


2. Route the main harness out of cavity behind the operator's seat. See *Figure 6-14*.

Figure 6-14 Routing Main Cable Behind Operator's Seat

3. Connect the 12-pin data and 2-pin power connectors between the Main Cable Harness and the SA Module Harness outside the cab. See *Figure 6-15*.

Figure 6-15 Main Cable Harness to SA Module Harness Connections (shown on bench)



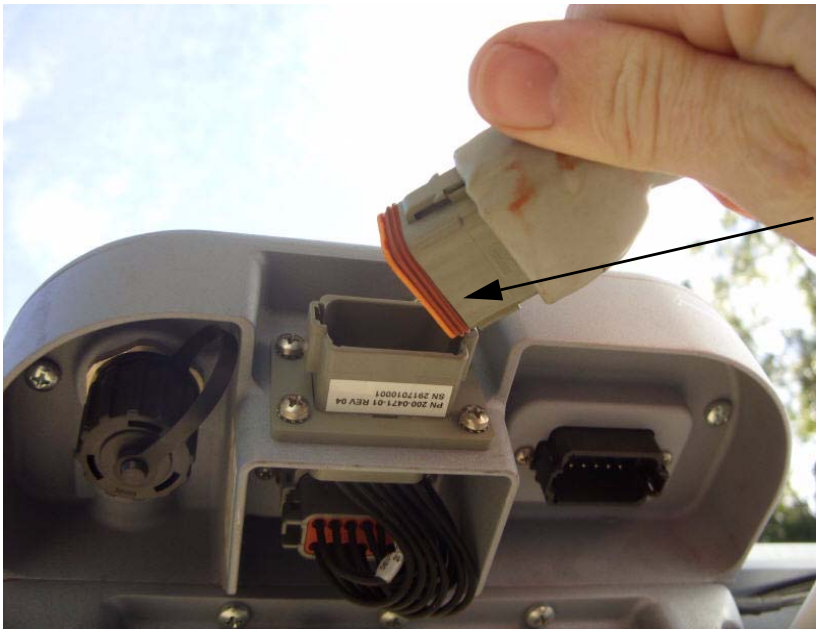
4. Route the Main Cable Harness up the cab right hand side hand rail or up the cab back right hand corner. See *Figure 6-16*.

Figure 6-16 Route Main Harness Up Cab Right Side

5. Connect the Main cable Harness to the Roof Module connector. See *Figure 6-17*.
6. Orient the 12-pin connector so the word TOP on the cable connector is pointing upwards (towards the sky). See *Figure 6-17*.
7. Insert the cable connector into the Roof Module. Push the connector in until it clicks and locks in place.

Note: To remove the connector, grasp the connector to compress the two side latches and then pull away from the Roof Module.

Figure 6-17 Connecting the Main Harness to Roof Module



8. Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle. See *Figure 6-18*.

Note: This orientation is usually towards your right side if you are standing on the vehicle left side and looking towards the Roof Module.

9. Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector. See *Figure 6-18*.

Figure 6-18 Roof Module Ethernet Connection

Display

1. Attach the Main Cable Harness to your Display harness.

Note: Refer to your Display Owners manual for details on connecting the Display harness.

Power Supply Connection

The following sub-sections describe basic instructions for connecting your Display and the AutoSteer system to available vehicle power sources:

- *12V Cab Power Outlet*
- *Battery Power Connection*

Note: Refer to your Display user manual for electrical connection information before attempting to connect the AutoSteer system to vehicle power. If your Display manual requires a cab power connection see the *12V Cab Power Outlet* section, if your Display manual requires a direct battery connection see the *Battery Power Connection* section.

There are two issues that must be addressed when connecting to 12V vehicle power:

- Display Connection
- AutoSteer System Connection

The Display must be connected to 12V vehicle power according to the wiring diagram provided with your Display. The AutoSteer system Main Cable Harness must be connected to a 3-pin 12V power connector. Your Display user manual provides

a wiring diagram for connecting the AutoSteer system to 12V Power. Your Display user manual may specify using a cab 12V power outlet or may require a direct connection to the vehicle battery. Your Display wiring diagram specifies the recommended vehicle 12V power source. Whether your Display harness connects to the vehicle battery or to the 12V power outlet inside the cab, it is shipped with the appropriate harness for your installation.

12V Cab Power Outlet

1. Locate the cab console right-side 12V power outlet. See *Figure 6-19*.

Note: If there is no 3-pin connector in the cab or it doesn't work, you need to provide a cab power outlet. Connect the provided power adapter cable to a vehicle power source capable of providing 12V at 15A maximum. See the power cable adapter as shown in *Figure 6-20* and *Table 6-1* for connection details.

---

2. Use this 12V power outlet if the Display manual specifies connecting to power inside the cab.

Figure 6-19 12V Power Outlet

3. Connect the Red (+) and Black (-) power cable adapter wires to 12 volt power on the vehicle protected by a 15 amp fuse.

Note: *Table 6-1* shows the Power Cable Adapter pinout.

Figure 6-20 Power Cable Adapter (201-0156-01)

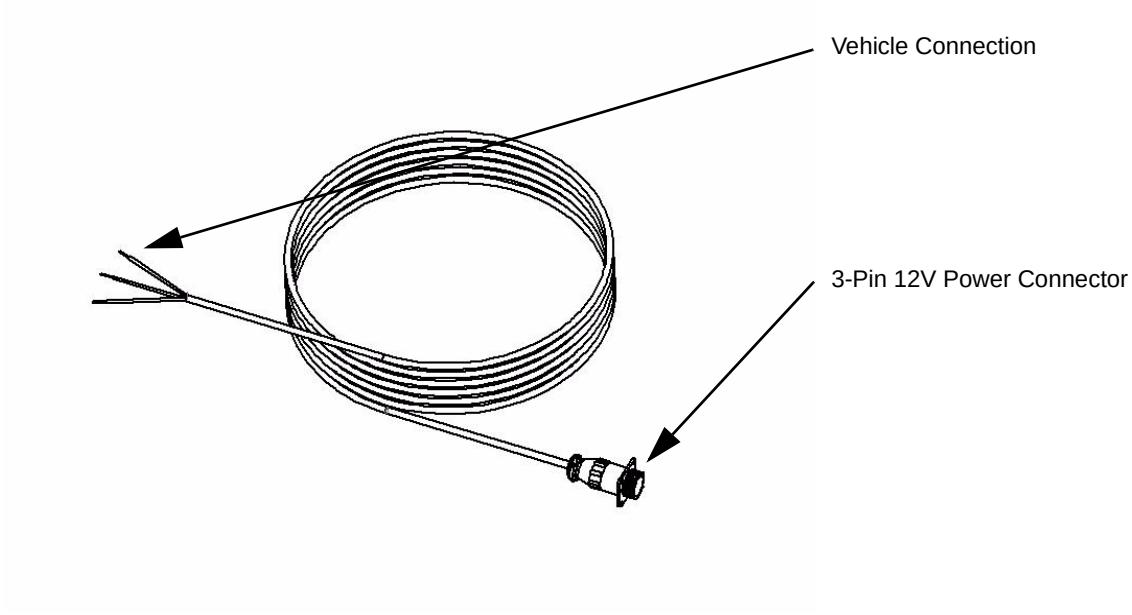


Table 6-1 Power Adapter Cable Pinout

Wire Color	Function
Red	12 V Unswitched Power
White	12V Switched Power
Black	Ground

Battery Power Connection

1. Locate the vehicle battery. See *Figure 6-21*.

Note: The location of the battery is determined by your vehicle model.

---

2. Connect to the vehicle battery if the Display manual specifies a direct battery connection.

Figure 6-21 Vehicle Battery Example (older model combine shown)

Install Warning Label

Install the Warning label on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles. See *Figure 6-22*.

Note: Install the warning label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German and Spanish.

Figure 6-22 Autosteer Warning Label

Post-Installation Procedures and Information

This **Post-Installation Procedures and Information** chapter contains information on procedures and processes that should be completed after the installation process is complete. The information for this chapter is contained in the following sections:

- *Verify the Vehicle is Ready for AutoSteer*
- *Calibration and Tuning Notes*

Verify the Vehicle is Ready for AutoSteer

1. Ensure all connectors are properly coupled.
2. Power ON the AutoSteer system.
3. Verify installation and system operation.

Calibration and Tuning Notes

Note: For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

Select the appropriate Case Combine model when setting up your vehicle on the AutoSteer system Display.

Final Hardware Installation Checklist

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

Note: The Final Hardware Installation Checklist is on the back of this page. You should keep a copy of this checklist and this manual for future reference when servicing the vehicle.

Vehicle Model: _____ Year: _____ Serial #: _____

Customer Name: _____

Location/Address: _____

AutoSteer Installation Kit Part Number: _____

NOTES

_____

_____

_____

_____

_____

_____

Name of Installer: _____ Date: _____

System Installation Checklist

1.	Wheel Angle Sensor Installed and all fasteners are tight.	☐
2.	Monitor Bracket Installed and all fasteners are tight.	☐
3.	Roof Rail is installed and all fasteners are tight.	☐
4.	SA Module is installed and all fasteners are tight.	☐
5.	All cable ends are connected.	☐
6.	All cables are secured with cable ties.	☐
7.	Roof Module locking pin is installed.	☐

AutoSteer Performance Checklist

1.	Complete AutoSteer system calibration.	☐
2.	Complete AutoSteer system tuning.	☐
3.	Check total Wheel Angle Sensor counts.	☐ Value_____
4.	Line acquisition is satisfactory.	☐
5.	On-line steering is satisfactory.	☐
6.	Manual override (kick-out) is working.	☐
7.	Steering speed from lock-to-lock is satisfactory.	☐ Value_____Sec.
8.	Measure the MAX RATE LEFT.	☐ Value_____
9.	Measured the MAX RATE RIGHT.	☐ Value_____
10.	Antenna offset is correct so the vehicle steers the same path up and back.	☐

Note: See the *Post-Installation Procedures and Information* chapter for additional information.